The Executive Resource for Doing Business on the Net

WEBMASTER

CIO A Supplement to CIO Magazine

January/February 1996

Getting the Continental Drift

WHAT TO DO WHEN YOUR WEB BECOMES TRULY WORLDWIDE

AN INTERNATIONAL DATA GROUP PUBLICATION

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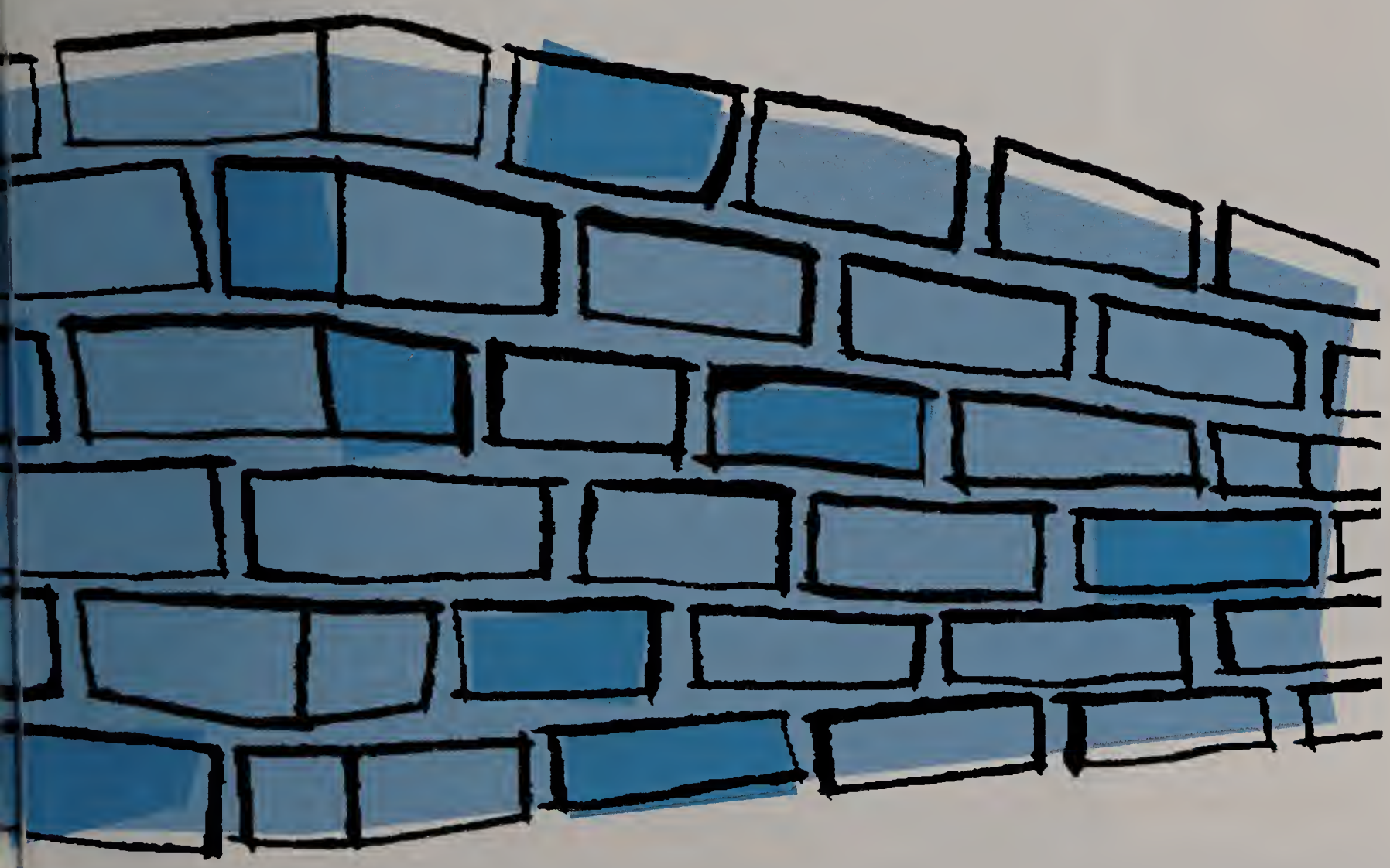

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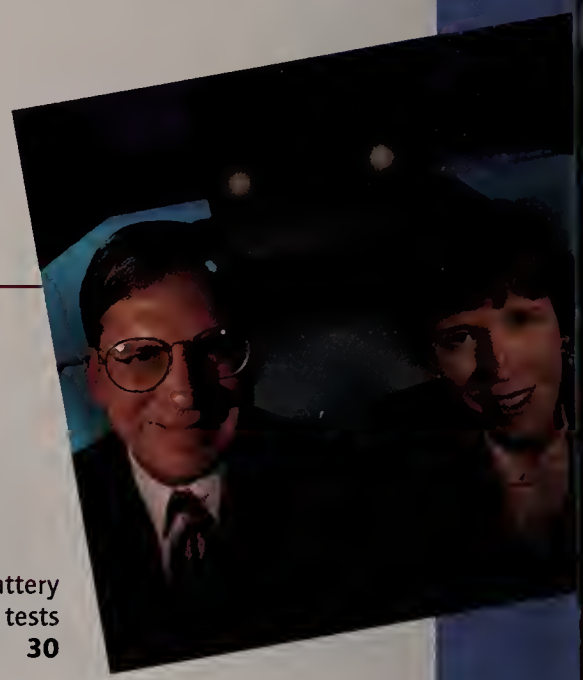

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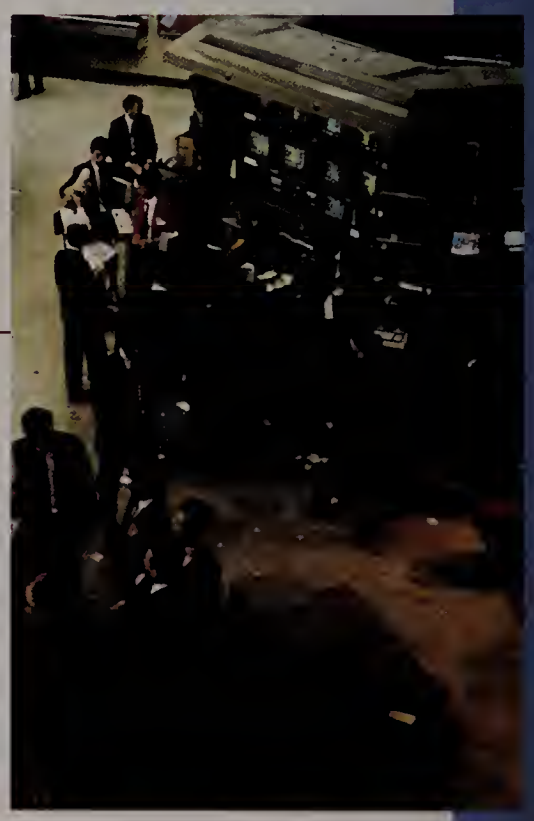

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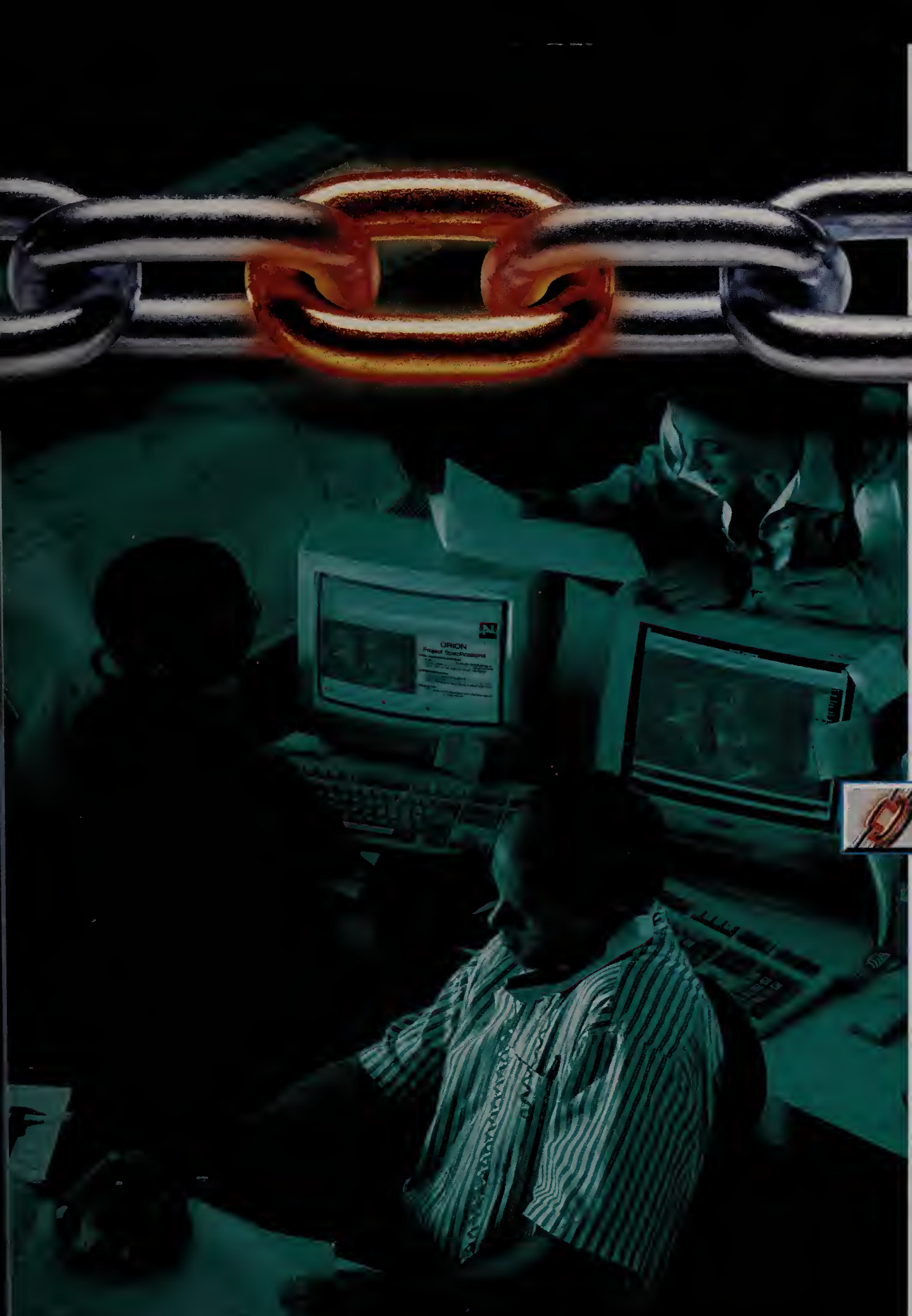

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RADIO HAS NO FUTURE.
HEAVIER-THAN-AIR FLYING MACHINES ARE IMPOSSIBLE.
X-RAYS WILL PROVE TO BE A HOAX.

WILLIAM THOMSON, LORD KELVIN,
ENGLISH SCIENTIST (1824-1907)

impossible

SPACE TRAVEL IS UTTER BILGE.

SIR RICHARD VAN DER RIET WOOLEY,
THE ASTRONOMER ROYAL (1956)

no way

never

WHO THE HELL WANTS TO HEAR ACTORS TALK?

HARRY M. WARNER,
FOUNDER, WARNER BROS. STUDIO (1927)

won't

RAIL TRAVEL AT HIGH SPEEDS IS NOT POSSIBLE BECAUSE PASSENGERS, UNABLE TO BREATHE, WOULD DIE OF ASPHYXIA.

DIONYSIUS LARDNER,
ENGLISH SCIENTIST (1793-1859)

WHILE THEORETICALLY AND TECHNICALLY TELEVISION MAY BE FEASIBLE, COMMERCIALLY AND FINANCIALLY I CONSIDER IT AN IMPOSSIBILITY. . .

LEE DEFOREST,
AMERICAN INVENTOR (1873-1961)

can't

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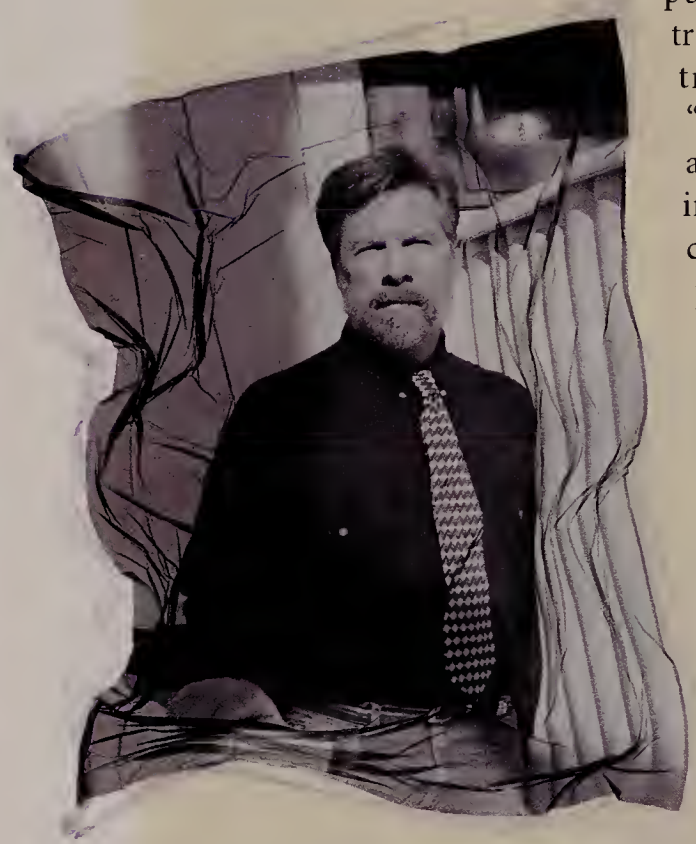
What's it worth?

The evolving adjudication of value on the World Wide Web will be a fascinating process, likely destined to play out in an atoms-colliding kind of way for quite some time to come. Now that the goods have gone virtual, the question of what they're worth is suddenly up for grabs, open to renegotiation.

Take the publishing industry. We used to print information—news and feature stories living more or less congenially with adjacent but clearly recognizable advertisements—exclusively on pulped ex-trees. Now we are in transition, also publishing electronically what now is called "content," some of which is advertising that looks astonishingly like the stuff we used to call "articles." Yeah, we still pulp trees, and we bravely insist that the esthetic pleasures and supremely portable convenience of printed magazines like this one will endure for long enough to see at least most of us through retirement age.



But with this new electronic deal, most of us don't know what the heck we're doing (well, actually, *we* do, but most of the others don't). I recently attended a conference entitled "Pricing for Content and Advertising on the Internet." Like my fellow attendees, I was avid for the information I was certain would be imparted. Avid, because even the consensus of uncertainty in our industry is scarcely preventing any of us from charging on ahead and doing stuff for which the ultimate ROI is essentially unknowable.

No one seems sure what to charge—rates careen ridiculously on a scale that looks as though it could have been designed by apes; but everyone wants to figure it out. And fast. Some are bluffing; others are adopting a consultative approach. But, bottom line, there's a kind of Wild West guessing game going on, characterized by sequences of meaning-rich grunts, shrugs and counter-shrugs ("Well, we're not quite sure about this." "Um, neither are we.") interrupted by brave assertions of proposed value ("How about $40,000 a month?") that, in turn, are greeted skeptically ("No").

In the information business, some things—for instance, straight news—may turn out to be worth less and hence may be given away as loss leaders; while others—for instance, relationship-based analysis and insight tailored to customers' specific needs—will appreciate. And there may in fact be classes of knowledge that have no clear precedent value and for which the Web will offer the necessary value proposition. "Context"—provided by explicitly recognizing or creating novel kinships that may knit bits of information into a useful larger meaning—is one such form of knowledge that is sometimes spoken of reverentially as a Web-made value-add. So, how much would you pay for context? Who knows?

But a fledgling industry of cybermetricians is springing up in answer to the aching hunger for some reliable measurement indices that can form the basis for defensible valuation. In publishing, the old "muscle" metrics based on sheer audience size are declared dead for Web purposes. But the new metrics aren't yet much past the alpha stage, at least not conceptually. Internet Profiles Corp. and NetCount, Nielsen Media Research and scads of others (even, we hear, including the Better Business Bureau) are proposing some bold alternatives that, although they preserve a little of that muscle-metric look and feel, in many cases forge ahead to track types of individual behavior and attention that make the Web a great venue for distinguishing among and serving single customers quite directly and effectively.

It may be that we are headed toward metering models so precise and finely divisible that any vestige of mass marketing collapses completely; none of the old principles will apply, and every

PHOTOGRAPH BY JERRY MARGOLYCZ

advertiser's promotional initiative might well acquire its final value only after the returns are in—based exactly on what it yields the client in measurable sales impact. A publisher would thus be paid on back-end results defined by the minutely attributed conduct of its audience. This, of course, makes publishers very squeamish. After all, who in his right mind wants his bottom line held hostage to some advertiser's

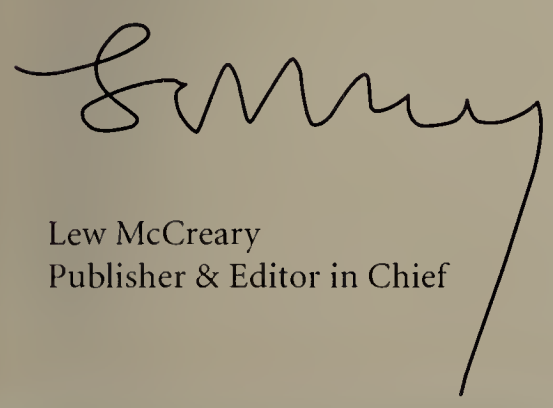
How much would you pay for context?

inept message or flawed product strategy? On the other hand, an excellent audience properly exploited could pay off handsomely.

The push of technological capability inevitably leads in this ambivalent direction. If customer behavior can be cheaply and truly captured in units of one, what's to stop an advertiser from demanding to be charged based on the sum of the audience's individual activity with the advertiser's client? On the plus side, though, the eventual availability of a nearly real-time customer feedback loop will allow smart advertisers to modify marketing for maximum effectiveness.

Lucky consumers! Now, instead of being grossly manipulated like aggregate heaps of similar matter, we can be manipulated—with creepy, unnerving precision—as intimately understood data bursts with a quantifiable revenue potential. No longer are we sacks of common chemicals with a demeaning street value of $1.97. Hey, I look forward to becoming a high-ROI Java applet in the near future.

So, how about you? Let me know what you're worth: *mccreary@cio.com*.



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Publisher & Editor in Chief

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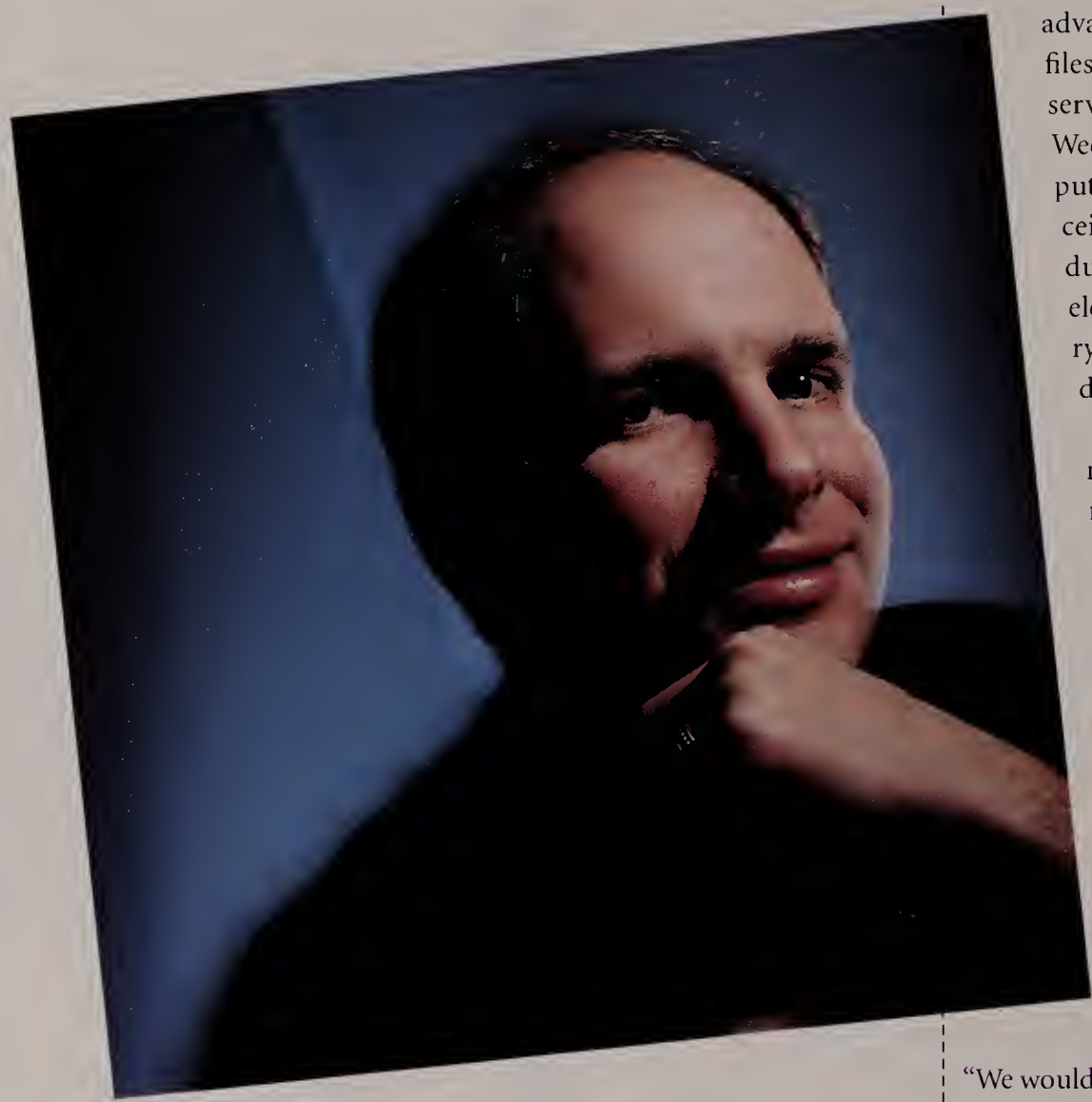
PROFILE

An Early Docu-Drama

When it comes to bandwagons, CopyTech Printing is a builder, not a jumper. The company started using the Internet in 1992, back when e-mail addresses—far from being de rigeur—were positively arcane. Now CopyTech is experiencing million-dollar annual revenue increases, half of which come from new business attracted by its Internet services, according to Director of Technology Jeff Weener.



JEFF WEENER: a strategy worth copying

Three years ago, CopyTech's customers—most of them high-tech firms with product-documentation orders—were sending the company huge files housed on dozens of diskettes for offset or laser printing. The company used couriers or Federal Express to collect the diskettes from points in and around Boston, an expensive proposition all round. But Weener was starting to hear about the Internet from some folks at MIT, and he was especially intrigued by a little feature called file transfer protocol. "No one else was doing it at that point, but we decided, let's take the risk," says Weener.

The company invested in a dial-up connection and an FTP server through Cambridge-based BBN Corp. (one of its clients) and started talking up the initiative to other customers. "The advantage to them was being able to put files from their desktop directly on this server where we could access them," says Weener. "They were getting gorgeous output with a lot less effort." (The process received a boost when Xerox Corp. introduced printers that can accept files electronically and store them in memory, enabling just-in-time document production.)

With 80 percent of its print orders moving back and forth over the Internet, CopyTech a year ago upgraded from a 14.4 connection to a 56K line. ("I know that sounds laughable now, but back when we started, it was so new and exciting people didn't care if it was a little bit slow," says Weener.) The company has also moved its server in-house and is preparing to let customers deliver files and place and track orders through its Web site (*http://www.copytech.com*).

The Web has also suggested a new business role for CopyTech: creating online documentation. "We wouldn't actually put together Web sites, but if people want links to some type of documentation, we would do it from the link down," says Weener. In addition, the company is working with a number of customers interested in creating actual electronic books using SGML.

Such initiatives will grow increasingly important for CopyTech as the rest of the commercial-printing world clambers onto the Net. But the company's early lead has won it lots of new—hopefully loyal— customers, all for a trivial investment of $30,000. "We've been able to go into companies and say 'What do you mean you're sending your stuff on a disk to your printer? Can't they take it over the Internet?'" says Weener. "It's been a wonderful calling card." WM

PHOTOGRAPH BY MARK ALCAREZ

WebMaster's Notebook

Remember when you discovered that being a CIO is as much about information management as it is about technology? Well, the same thing is happening to webmasters, whose amorphous responsibilities increasingly include locating and organizing information-rich links for their companies' internal Web pages.

In that respect, webmasters perform some of the same duties as reference librarians: assessing their companies' information needs, identifying the resources that fill them and then making those resources easily accessible—in the form of links—in a single place. Those links might lead to industry-specific journals, sites that publish SEC documents, news-filtering services or business-related Usenet groups. If your company is heavily into Web development, the links may also point to state-of-the-art sites from which staff members can cheerfully pilfer ideas.

The appeal of some links will stretch across functions and industries, but creating a links library also requires identifying those non-obvious sources of information that appeal to narrow organizational slices. To accomplish this, seek out representatives from all your functional constituencies—sales, legal, engineering, etc.—and ask them what they do all day and what resources would help them do it better. Encourage everyone in the company to send you worthwhile URLs as they run across them; when you receive new links, alert interested parties through e-mail and/or a "What's New" section on the internal corporate home page. (Function-specific links should probably be published on departmental pages to reduce clutter.)

Whether or not your colleagues bombard you with site suggestions, you will probably remain the principal source of new links in your organization. For that reason, try to scope out the Web daily for recent additions. Sort links by categories appropriate to your organization (general business publications, industry news, government documents) and include links to surfing and searching tools as well as a "Webmaster's Picks" section for your own favorite sites. You can even move some of these links out to your company's external pages if you think customers will find them useful. But be careful: If you have a category called "Competitors to Watch," it should probably remain in-house. WM

Describe Yourself

Snagging a domain name, putting up a Web site—them's the easy jobs. It's all the organizational stuff that's tough—figuring out where the Web initiative will be based, which departments should participate, what the webmaster's duties are, who supplies content (and how), not to mention reporting structures, titles, salaries, chains of accountability, executive sponsorships etc., etc., etc.

The impression we're getting at *WebMaster* is that organizational models are all over the map and are so new that their relative merits and drawbacks have yet to be tested. So, in order to provide as complete a picture as possible of what's going on out there, we'd like to know how things are shaking out at your company. Send master plans, sketchy ideas and dizzyingly complex organizational charts to *WebMaster*'s Executive Editor Leigh Buchanan at *buchanan@cio.com*. WM

That Golden Touch

Most of the electronic-commerce talk has focused on what customers will demand of businesses. But if it all takes off as predicted, businesses will be demanding a higher level of service and support from their Internet service providers—"platinum" service, in the words of Howard Anderson, managing director of The Yankee Group.

"Current service is arcane and difficult to use; security is nonexistent; the delays are bothersome and speed is a

major impediment," Anderson says. "Right now, most companies are just playing with the Internet, but when they get into real application development, they're going to need more."

Platinum services would operate closer to the Net backbone and would guarantee better security and faster response time. Although companies would pay a premium, they'd be able to recoup the investment by charging for new online services or by offering special services to special customers.

Anderson expects such services by 1997 but "20 percent of the Yankee Group 200 would vote for it now." WM

ILLUSTRATIONS BY MIKE LEE, ICON BY JAMES KRAUS

Let Someone Else Entertain You

You can outsource your server; you can outsource your design; you can outsource your electronic-commerce division softball team if you want to—just don't outsource your content! That's always been the advice to Web-bound companies, the theory being that outsiders can't understand your business as well as you do and are therefore likely to inexpertly—or inaccurately—represent you to your online visitors.

But there's a new line of thinking that goes like this: Yes, companies are best qualified to present basic information about their own products and services, but with surfers expecting entertainment and information as well as utility, sometimes it pays to go outside for a little razzmatazz. "If you are a company that deals in content—a magazine publisher, a broadcaster—you already have a product that will hold you in good stead when you move to the Web," says Bob Crooke, vice president for communications at Reuters New Media Inc. "But what if you're a typical Fortune 500 or 1000 company? You'll have your annual report, your press releases, some other proprietary content. But how do you keep it new and interesting to a culture that is increasingly about surfing and cruising? How do you keep people coming back?"

Reuters' solution is for sites to deliver something everyone is interested in—news. The company is providing news feeds—which are by definition constantly refreshed—to sites ranging from Yahoo! to MCI. It can also tailor feeds to suit individual sites: automotive news for one of the Big Three, say, or sports news for a sneaker company.

Another solution to the content problem is customized on-site magazines. These electronic publications "might be geared toward a company's customers or about the great sharks of Australia," says Dale Dougherty, president of Songline Studios, which publishes the spiffy *Web Review* (*http://gnn.com/wr/*). "But you need an independent group to [create such a product] because if you do it in-house, they're going to lather it up with advertising."

Dougherty says he would be interested in producing online magazines for corporate sites, although he envisions working in a partnership with shared equity, rather than as a traditional outsourcer. "I'm interested in this as a way of developing the personal side of the Web, " says Dougherty. "Data sheets are not personal, and they are not going to get people into the habit of reading online." WM

RECLINE ONLINE:

When calculating your Internet investment, don't forget to figure in the cost of buying one of these Netsurfer chairs for every member of your organization. Created by a couple of 27-year-olds, the Netsurfer is available from Design Finland Inc. (310 659-2075) at an introductory price of $3,490 (that's *sans* the computer and speaker systems pictured here). WM

Speaking Up for Users

The growth in Internet publishing has thrown copyright holders into a tizzy, as evidenced by several high-profile infringement suits and the lawyers who invariably appear at Web seminars to warn attendees that stealing is wrong. Creative types and others are understandably concerned that—since digitized words and images are so easily posted, copied and manipulated—they will a) lose control of their work or b) not be remunerated for it.

Those concerns are valid, but so are other interests that have received less attention. The research and academic communities, in particular, are worried that users' rights may be overlooked as copyright owners battle to get what's coming to them. "The purpose of copyright is to promote the progress of science and [useful arts]," says Bob Oakley, director of Georgetown University's law library and a professor at its law school. "It is not exclusively to make money for copyright owners."

Oakley doesn't disagree with arguments that copyright owners should control the distribution and reproduction of their work. But he worries that the ability of rights owners to impose total technological control over their material will impair the public's access to information. "The technology, in effect, gives copyright owners a complete monopoly over use of their work," Oakley explains. If rights holders choose, they can prevent people even from browsing and force them to pay for any and all usage. That prospect is especially troubling as more and more information is available exclusively online, reducing the role of libraries as an alternative, free source.

"Those who are on the other side of the house, the publishers and so on, say that browsing threatens too much," says Oakley. But he compares their position to early arguments that radio broadcasts of baseball games and opera would reduce attendance at stadiums and concert halls. The opposite proved true, of course. "By making things available on the Net, [copyright holders] can generate publicity and probably gain a larger readership," says Oakley. "They're cutting off their nose to spite their face." WM

ILLUSTRATION BY MIKE LEE

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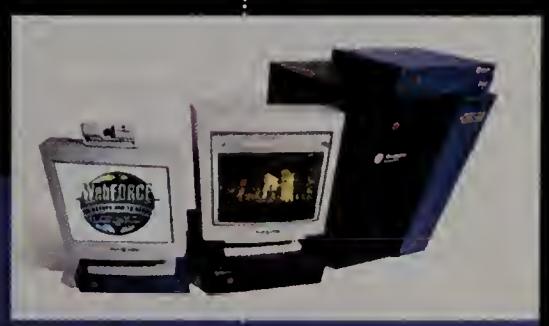
You set up a Web site hoping that a lot of people access it. Then, unfortunately, that's exactly what happens.



Perhaps the most important consideration when doing business on the Web is making sure your server is powerful enough to handle the visitors you attract. Because if it's not, when hundreds of people try to get to your site at the same time, they'll have to wait far too long. Which means, they'll probably move on to someone else's site. That's why companies are choosing the unrivaled throughput and scalability of WebFORCE™ servers from Silicon Graphics to power the highest traffic sites on the Web.

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see what's possible

Free-for-Alls

Despite their often opposing agendas, businesses and public-service organizations have been known to play nicely together. Now they are starting to cooperate online as well, on non-profit networks established to provide free community access to the Internet and other electronic resources.

Free-Nets, a service mark of the National Public Telecomputing Network (NPTN), rely on individuals, corporations and local government for funding and staffing. Corporations can underwrite the creation of a Free-Net, then sponsor special events and promotions to attract users. Volunteers offer the uninitated tutorials on using the network to find a job, send e-mail, or check up on community events, weather and news. From there, it's a short step to the vast resources of the Web.

Commercial involvement with Free-Nets will probably remain limited, since most lack the tools and bandwidth to support true electronic commerce. But for companies wishing to improve their local image, Free-Nets offer a golden opportunity. "Businesses can increase their visibility by sponsoring bulletin boards and chat rooms or by posting guest books and static files describing their role in the community," explains Peter Harter, former executive director and general counsel of the NPTN. Harter points to Toyota as a company that could use Free-Nets to promote itself as a good citizen (issuing online invitations to a charity barbecue, say), in the process helping people forget that it is foreign-owned and competes for American business.

Companies may also be able to buy advertising space on Free-Nets, although the legal issues surrounding such an arrangement have not been resolved. It is an idea that would likely be embraced by the networks as a means to survival, says Dan Iddings who, as assistant director of networked and automated services at the Carnegie Library of Pittsburgh, coordinates that city's Three Rivers Free-Net. "Most Free-Nets don't enjoy the position we do of being a department of the library," Iddings explains. "Every time you turn around, they are having a pledge drive."

Despite financial difficulties, Free-Nets are proliferating. In January 1994, there were 20; today, there are around 100. For more information, visit NPTN's Web site at *http://www.nptn.org*, or check out *http://duke.usask.ca/~scottp/free.html*. WM

All Work, No Play

If you're trying to make the case for the Web's utility to your corporate uppity-ups, showing them the Mr. Smarty Pants site (*http://www.auschron.com/mrpants/*) probably won't cut much mustard. Fortunately, the Web is chock-full of sites that offer value to real business people doing real business things. Here are a few:

SalesDoctors (*http://www.salesdoctors. com*) is a free, Internet-only Web magazine for sales managers, marketing executives, business owners and others. Despite the sometimes-too-cute medical language that provides the site's organizational metaphor, the publication offers good advice on locating prospects, nurturing customer relationships and building sales tools.

International Business Resources on the World Wide Web (*http://ciber.bus.msu.edu/busres.htm*) is mostly a bunch of links, but they're really great links. Sites pointed to contain country-specific information from Australia to the United Kingdom (what, no Zanzibar page?), customs laws, foreign and domestic business publications, international trade projects and government resources.

A Business Researcher's Interests, as Yogesh Malhotra's site is called, are likely to be yours also if your job touches on reengineering, organizational learning, complex systems research or other issues at the junction of business and technology. Check out *http://www.pitt.edu/~malhotra/interest*.

Herbert Hoover may not have been a great president, but Hoover's Online is a fine competitive intelligence tool. Plug in the URL from hell (*http://www.pathfinder.com/@@tND6YdHDMwMAQGA9/money/invest/hoover/Hoovers_Home.html*) and you'll find profiles of about 1,000 of the best-known U.S. companies, updated annually and revised when events affect content. WM

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Policy Adjustments

The normally conservative insurance industry gets a high-tech treatment from InsWeb

One test of a good idea is whether more than one person arrives at it independently. Hussein A. Enan had never heard of Industry.Net when he and his partners started developing a centralized Web site for insurance companies and their customers. But that model, in which one site serves an entire vertical market (in Industry.Net's case, manufacturing), also underlies Enan's InsWeb and may well prove one of the more effective stratagems for organizing and facilitating electronic commerce.

To use a tired simile, you can think of a vertical Web site as a mall, in which all the stores offer similar or complementary services. But instead of those goofy T-shirt stands and potpourri carts that range down the corridors of a physical mall, the site's "landlord" fills public spaces with non-branded information and services. The result is a bounded online arena for the conduct of all activities related to a given subject.

The value of this to both consumers and suppliers is obvious: Consumers get links to a wide selection of service providers (presumably vetted by the site host) in one place as well as unbiased information and customer support. Providers can reach out to new prospects, reduce their marketing and overhead costs, and cooperate in promoting the entire industry. "There is considerable power in combining resources to publicize one site rather than every [company] going off to publicize their own," says Enan, who is chairman and CEO of InsWeb's parent company, Strategic Concepts Corp. "And [the landlord] can provide for the orderly distribution of unbiased material and tools that will help participating companies perform more efficiently."

Enan and Darrel J. Ticehurst, Strategic Concepts' president, are not your typical damp-behind-the-ears netrepreneurs. Rather, they are fifty-something retirees, with six decades of industry experience (Enan in insurance, Ticehurst in software) between them. Still, youth played a role in their company's creation. The idea for InsWeb came—indirectly—from Enan's teenage sons, who introduced dad to electronic commerce two years ago when they asked to borrow his credit card. "I said, 'You're always asking me for my credit card; show me what you're doing with it,'" recalls Enan. "So they showed me how they could buy things [over CompuServe and Prodigy], and I said, 'Can you buy insurance?' We looked, and all we could find was one company selling insurance for camping equipment. That started the idea percolating."

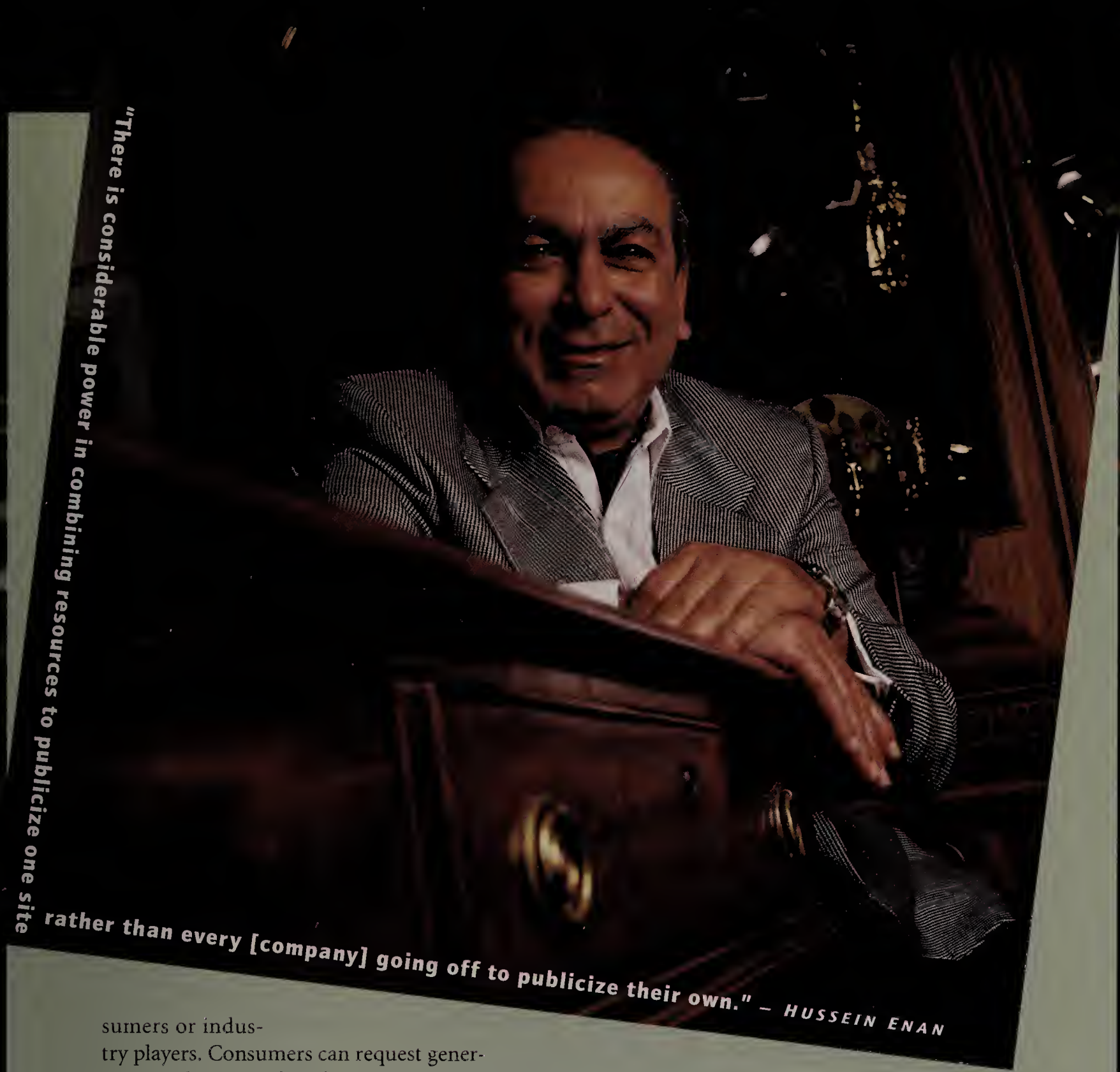
Back then, Enan was a senior executive at a large reinsurance organization and had no leisure time to develop the new business model. But when he retired in November 1994, he took up the idea again and brought it to Ticehurst, a long-time friend and neighbor. With the help of some others, they put together a "seven-figure" stake to launch InsWeb.

The next step was recruiting tenants; Enan was able to leverage 30 years of elbow-rubbing to gain entree to the upper echelons of desirable insurance companies. "Unlike most high-tech start-ups, we were able to go directly to the highest levels and talk to them about the concept," he explains. "Normally, big companies will spend months considering every move, but we got people to act very quickly." (Twenty-five companies had committed to InsWeb as of early November, and Enan expected twice that many to have signed on by the end of 1995.)

The financial model for InsWeb is similar to that of established Internet malls: Insurance companies pay a monthly fee—under $1,000—in exchange for space on InsWeb's servers. InsWeb also takes a small cut—somewhere between $2.50 and $10—of every transaction concluded through the service. "We decided to do it this way rather than ask [the insurance companies] to participate in developing the site or charging them an arm and a leg for being there," says Enan. "This way, our success is very much tied in with the success of our tenants."

Visitors to *http://www.insweb.com* choose different tracks depending on whether they are con-

http://www.insweb.com



"There is considerable power in combining resources to publicize one site rather than every [company] going off to publicize their own." – HUSSEIN ENAN

PHOTOGRAPHS BY LESLIE FLORES

sumers or industry players. Consumers can request general or product-specific information, seek unbiased advice from independent associations or ask for a quote. Visitors who know what they want but not where to get it, can search InsWeb's database of members' policies to narrow the choice of providers ("I'm looking for a company that insures apartments and automobiles in northern Illinois"). The site also includes help features to demystify insurance-speak; in the works are a tutorial for analyzing insurance needs, an electronic claims-filing capability and portfolio-management tools.

Industry types visiting InsWeb can get information on other companies; link up with claims adjusters, physicians and lawyers; or check out the latest regulatory changes. And tenants will be able to prequalify prospects over the Web, as well as develop new products that would not be viable in any other form. "You could, for example, offer customers a bicycle insurance policy for $24," Enan explains. "Offline, that would not be cost-effective."

In November, InsWeb began a pilot for companies that want to actually sell insurance over the Internet. But Adam Schoenfeld, vice president of publishing at consultancy Jupiter Communications Co., says that piece may be a while in coming. "The whole transactional sector of the Web is slow to develop, and people may be especially reluctant to buy insurance online because it is a high-ticket item," he says. "But if InsWeb succeeds in establishing the industry relationships, and if it markets effectively to consumers, then I think their prospects are good." WM

—Leigh Buchanan

Where the Auction Is

Having failed to make a mark with pen computing, an intrepid entrepreneur is bidding for success online.

Jerry Kaplan is a computer industry Rocky Balboa. Currently he's known as the Web's master auctioneer, but in the late '80s, he mustered the resources—and the nerve—to go up against the big boys, like Microsoft's Bill Gates and Apple's former chief John Sculley, with a then-radical, untested, pen-based operating system developed by his startup company, Go Corp.

Go ultimately didn't, but Kaplan went the distance, so to speak, blasting through $75 million from the likes of IBM and AT&T in the course of what he now calls "a high-stakes game of Capture the Flag in the operating systems business." Unfortunately for Kaplan, his partners and employees, the system never made it to market—pen-based computing remains a good idea that for most people is just a little too far ahead of its time.

Still, intangibles sometimes matter more than the real thing. And in that regard, Kaplan experienced a kind of Rocky-ish epiphany: The sense of perspective gleaned from failure can be just as valuable—and interesting—as the view from the top. Kaplan has penned a book about his experiences that is clear-eyed and devoid of spite or regret—key attributes of the resilient entrepreneur.

Indeed, the book, *Startup: A Silicon Valley Adventure*, ends with a beginning: the fledgling idea behind Kaplan's new venture, Onsale, which went live last May after a two-year gestation. Unlike Rocky, however, Kaplan doesn't seem doomed to more of the same, only different. Kaplan II has some fortunate distinctions from the original.

Onsale (*http://www.onsale.com*) is an online auction forum that is no less ambitious than Go—"We want to become the QVC for computer nerds," proclaims Kaplan—but it is grounded in at least a few practicalities: the qualified acceptance of the Web as a business medium, relatively tame startup costs and the technological critical mass of HTML.

Onsale takes advantage of the Web's basic level of interactivity by offering real-time bidding on such things as computer equipment, sports collectibles, wines, rock concert tickets and electronics. The mix of merchandise reflects the typical Web surfer, according to Kaplan: "They're [technically oriented] males, age 25 to 45, generally higher-income. And they usually do not have a very interactive social life, because otherwise they wouldn't be spending so much time cruising around on computers."

Even if the audience begins to shift, Kaplan says it won't take long to figure out what's selling on a medium like the Web. "It's like a very fast stream," he ex-

http://www.onsale.com

"We want to become the QVC for computer nerds." — JERRY KAPLAN

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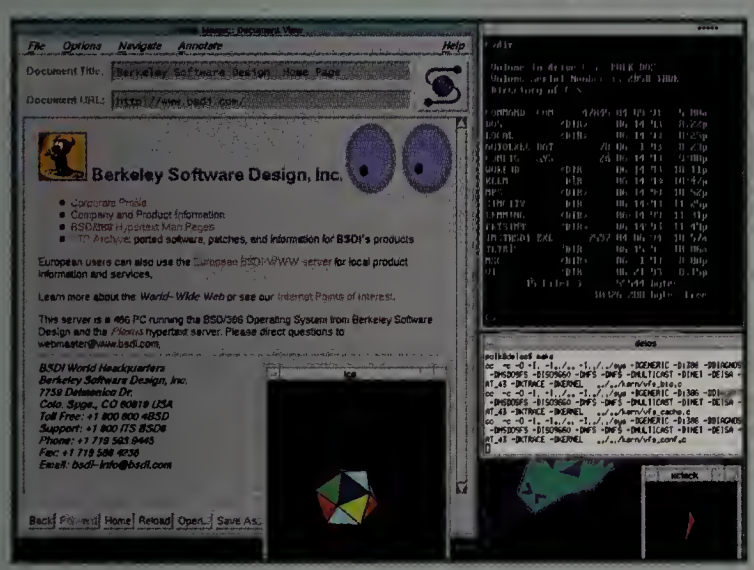

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INFOWORLD 1995

The INFOWORLD Score

BBN Internet Server (Based on BSD/OS)	7.6
BSDI Internet Server	7.0
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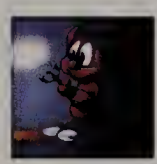

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plains. "You can't really see what's going on under there, but you lower your line and you try different types of bait and when you hit the right one, it's like a feeding frenzy. I can put 20 radar jammers up, go get a soda, come back, and they're all bid on. Other things can sit there for weeks without a nibble."

Not that Kaplan keeps anything out for very long. "Contrary to conventional wisdom—including ours—you think you have unlimited shelf space, but the fact is people have a very finite and limited attention [span]," he explains. "We find that if we don't grab somebody's attention within three or four page touches, they're gone."

Most Onsale addicts sneak into the site at work, where they check up on the action in spare moments. The most popular format is the so-called "Dutch auction," where those with the highest bids receive the merchandise at the price bid by the second-highest bidder. Onsale's "mailbot" e-mail system automatically notifies high bidders when they've been usurped and warns them how much time they have left to raise the ante.

Unlike the online catalogs that constitute most Web-based selling experiences these days, Onsale creates a visceral connection with the Web's unruly older relative, the video game. "What we've done is create a real-life, real-money game where the winners walk away with incredible deals on unusual merchandise," exults Kaplan.

Sometimes the deals are indeed incredible; sometimes they're merely aggressively cheap. Regardless, there's a kind of voyeuristic thrill to logging in to see what's on the block today because the winning bidders' initials appear onscreen, along with their home cities. That clipped sense of community is a draw that could become more important as the site evolves, and Kaplan is nurturing the potential by enabling everyone who bids to tack on an e-mail message of up to 40 characters.

There's a kind of voyeuristic thrill to logging in to see what's on the block today because the winning bidders' initials appear onscreen, along with their home cities.

He's also bringing the nerds back with Dren E. Lasno, his hapless, socially maladroit alter ego who, besides being a victim of vicious anagramming, suffered through 10 episodes of ritual humiliation before being relegated to wise-guy site-greeter status. (In true Internet archiving fashion, all 10 entertaining episodes are available through the site.) "Dren is all of us—he's Everynerd," says Kaplan.

Though sparse in its number and range of offerings (that's on purpose, says Kaplan—Net cruisers don't have all day), the site's sales are rising 50 percent a month, 20 percent of that from international buyers. "There are days when we move more than 100 computers," he says.

To keep traffic growing at that rate, Kaplan knows he can't rely on Dren E. Lasno's emcee skills forever. "The standards for what constitutes an interesting Web site are rising pretty rapidly," Kaplan says. "Within 12 months, one or more new competing standards, like [Sun Microsystems'] HotJava and Adobe Acrobat, will emerge to enable animation, much more detailed control of layout and better use of graphics. People won't be much interested in the sites we know today when there are other sites that function more like TV or video games." Kaplan envisions Onsale combining elements of the stock market—a ticker-tape crawl, for example—with the enticing game atmosphere of a casino. In a richer graphical environment, products may be rendered in 3-D and spin around for closer examination, or they may be pitched by digital infomercials. (Just imagine: Cher online!)

Meanwhile, Kaplan must deal with several challenges: finding enough cut-rate merchandise to feed the hungry masses, tempering the fear of offering credit-card numbers over the Web (call them in if you're skittish, he says), and coping with customer service issues. In the era of fawning 800-number operators, he also needs to stay out of the returns business to make money. But Kaplan brushes off the latter concern. "Anybody who's going to buy an NEC Pentium with a credit card over the Net, you know they know about computers and don't need a lot of hand holding. These are not a bunch of old ladies."

Still, Kaplan has been through enough in his entrepreneurial adventures to know that someday he'll have to figure out a way to reach those old ladies. He believes they'll find him first. "There is no product push on this stuff at all, it is all customer pull," he says. "I'll sell whatever the customer wants to buy." WM

—Christopher Koch

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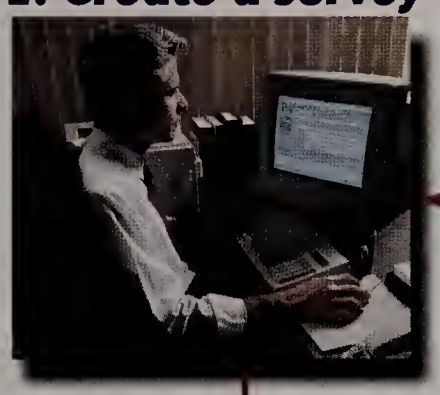

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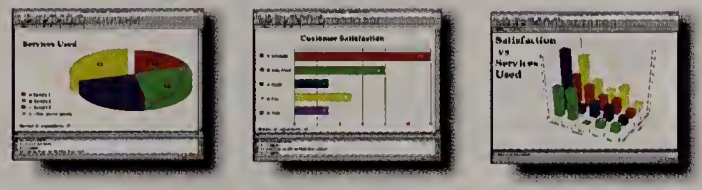

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THESE DAYS YOU CAN DRESS UP YOUR WEB SITE WITH EVERY CAPABILITY SHORT OF SCRATCH-AND-SNIFF. THE QUESTION IS: SHOULD YOU? BY JIM STERNE

So Many Toys, So Little Time

The thing that attracts most of us to the World Wide Web is its infinite variety and penchant for constant change. I have never seen a business that continues to require so much learning on a daily basis. It keeps life very interesting.

There are so many new technologies, so many new toys to play with, so many new ways to attract people to your Web site. When the Internet was an ASCII environment, the message was the message. Now that we can muck with server-push, 3-D space and streaming audio and video, the medium is the medium. There is serious danger in ignoring the pell-mell, headlong rush of new technology. Get behind for 10 minutes on the Web and, like Alice in WWWonderland, you have to run twice as hard just to stay in the same place.

But there is an even greater danger of overdoing it. The sheer joy of puttering with new technology can carry you over the edge of good design. Admit it, your all-time favorite movie moment is the scene in "Apollo 13" when the chief engineer walks into the room with a carbon dioxide filter in one hand and a box of miscellaneous parts in the other and says, "Gentlemen, we have six hours to make one of these, using nothing but this." Tinkering to save lives. Kludge as king.

The danger is making your Web site so crowded with fun toys and new gizmos that your audience gets sidetracked at best, frustrated at worst. Remember, your Web site is there for a reason. Keep that reason uppermost in your mind at all times.

To help restrain you from overburdening your site with techno-gadgets, here's a look at several of the most tempting, tempered with some warnings on how they might prove less than ideal in supporting your company's special purpose.

ILLUSTRATION BY CHRIS PYLE

Newsgroup Tools

Put a newsgroup on your Web site to encourage conversations among happy customers. It's nice to have real people telling real stories about how really pleased they are with your products. You can even have separate discussion groups for each product line. But don't get carried away. Too many conversations can leave visitors confused about where to click first.

Getting people to post to a dozen groups is no small task. You could easily end up with a healthy number of categories suffering from an unhealthy amount of interchange. If you commit to this approach, assign somebody the responsibility to start conversations, even if he or she has to use the telephone to do it.

By the way, Internet newsgroups hold a wealth of information, including comments you may want to re-post on your site. It behooves you to take a continued interest in them. The best way? DejaNews Research Services or InfoSeek, which let you search newsgroup postings for instances of specific keywords (such as the name of your product or company).

If you find yourself dealing with unhappy customers, try a private listserve: They are easy to set up and make customers feel special. Ask a select group of people for advice on your products and

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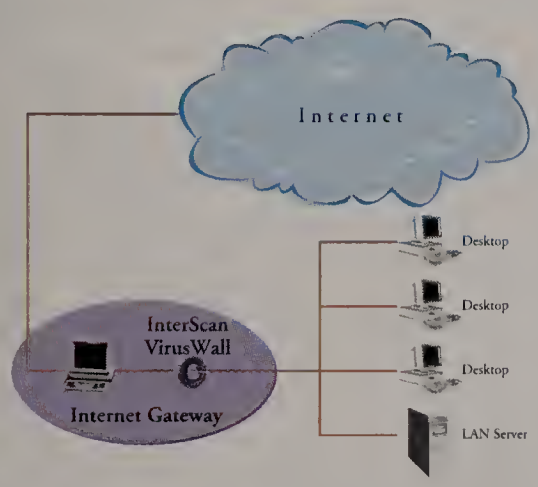

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Be Seen as Well as Read

To see your face on the small screen, try WebChat from the Internet Roundtable Society. WebChat lets you indulge in onscreen discussions, with photographs displayed next to each participant's comments.

Open forum? Don't be tempted. The Internet has a great many people who like to say a great many things. Not all of them cogent. Not all of them polite. Instead, sponsor an online panel of experts in your field and invite your customers and prospects to listen in. It may even be worth a press release.

Chat tools are also great for personalized customer service. ("I'm looking for something about your new widget on your Web site and can't find it. Do you know if it comes in green and works with my video card?") Just like thumbing through a catalog, it's nice to have the virtual 800 number handy.

(By the way, you do have your real 800 number posted on your Web site, right? And people dialing that number will reach someone who knows what is on that site, right? Just checking.)

For visitors who need to be drawn a map (and face it, there are lots of them), a new technology for TCP/IP-enabled whiteboards might help. Paradise Software Inc. is touting a digital sketchpad called Simplicity that enables customer-service people to draw circles around the link to your online manual.

> The sheer joy of puttering with new technology can carry you over the edge of good design.

Should you extend this customer interaction to video? White Pine Software Inc. and Xing Technology Corp. say the time has come. The Magic 8-Ball says, "Try Again Later." This technology crawls very well but tends to be a bit unsteady on its feet. The majority of site visitors are still on modems, and at 28.8 this video looks more like a flip-book than a VCR.

Be Heard as Well as Seen

If something on your site just begs for verbal description, try RealAudio from Progressive Networks. Santa Monica Bank uses RealAudio to describe its back-of-the-bus advertising: You look at pictures of the ads while the voice-over explains the campaign's origin, objective and results. I was fascinated, being a marketing type.

You can see how this might apply to selling your products. Viewing a product photo while listening to someone explain how it works improves comprehension. But make sure that the audio track adds real value and that the video and audio effectively reinforce one another. Record companies and radio stations have latched on to RealAudio in a big way, but how long can you study the album cover while listening to a song clip?

Tools like Camelot Corp.'s DigiPhone and Quarterdeck Corp.'s WebTalk let you use your computer as a telephone, talking with customers around the world via a local Internet connection. When we all have sound cards and bandwidth is plentiful, this form of communication will be standard fare. Until then, best to keep the Internet-as-telephone on hold.

Information Inundation

If you have a sea of information to impart, you have two choices: make it simple to find or deliver it en masse. To accomplish the former, you could hire some computer scientists to create the optimal search tool for your Web site. Or you could try AnchorPage from Iconovex Corp., which automatically indexes your text files into link-filled HTML pages. Very good for the serious data hunter. Piece of cake for the webmaster.

If you have oceans of data, you might

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Santa Monica Bank
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Silicon Graphics' WebSpace
http://www.sgi.com/Products/WebFORCE/WebSpace

Sun Microsystems
http://java.sun.com

Voyager
http://www.voyagerco.com

WebChat
http://www.irsociety.com/webchat.html

White Pine Software
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Xing Technology
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consider a unique helper application from Voyager Co. called CDLink. This nifty software lets you play specific selections of a CD on the client PC. Current examples only appeal to music lovers, but think how you might use it to tie your Web site to your predelivered-on-CD catalog or industry report.

From Magazine to Museum

If you're already weary of Netscape Communications Corp.'s server-push, maybe it's time to bring your site into the third dimension. Silicon Graphics Inc.'s WebSpace has you coding VRML to create mathematical models of your corporate headquarters, space station, product line, etc. The visitor navigates through this 3-D space to find the text, graphics and links you have scattered about.

Is this an exciting new techno-doo-dad? Oh yes. Does it have drawbacks? Does a laptop battery give out just when you need it most? Picture the pages of a Web site nailed to the walls of a virtual room. Picture the extra time and trouble it takes to download the external viewer application. Picture the effort to maneuver over to the image you think you might be interested in. Picture yourself surfing over to The Amazing Fish Cam because it's more exciting.

If you want 3-D on your site, it had better be worthwhile. Show us a model of your product. Let us walk through a model of your process. Give us information that we couldn't get in any other way. A picture is worth a thousand words. 3-D is worth doing only if it's done very well.

Web Site Caffeine

The ultimate test of your marketing imagination is figuring out what to do with HotJava from Sun Microsystems Inc. HotJava lets you embed small software applications (applets) into your Web pages. How is it used now? Tracking live sports scores, displaying stock market prices, holding live auctions, adding animation, including executable spreadsheets and inserting rotatable product pictures. What could it be used for? Almost anything.

So be the first on the Web to implement some really nifty, object-oriented, client/server, artificially intelligent marketing masterpiece. Just don't forget to keep it simple. WM

Jim Sterne (jsterne@targeting.com) *is president of Target Marketing of Santa Barbara. His new book,* World Wide Web Marketing, *is available from J. Wiley & Sons.*

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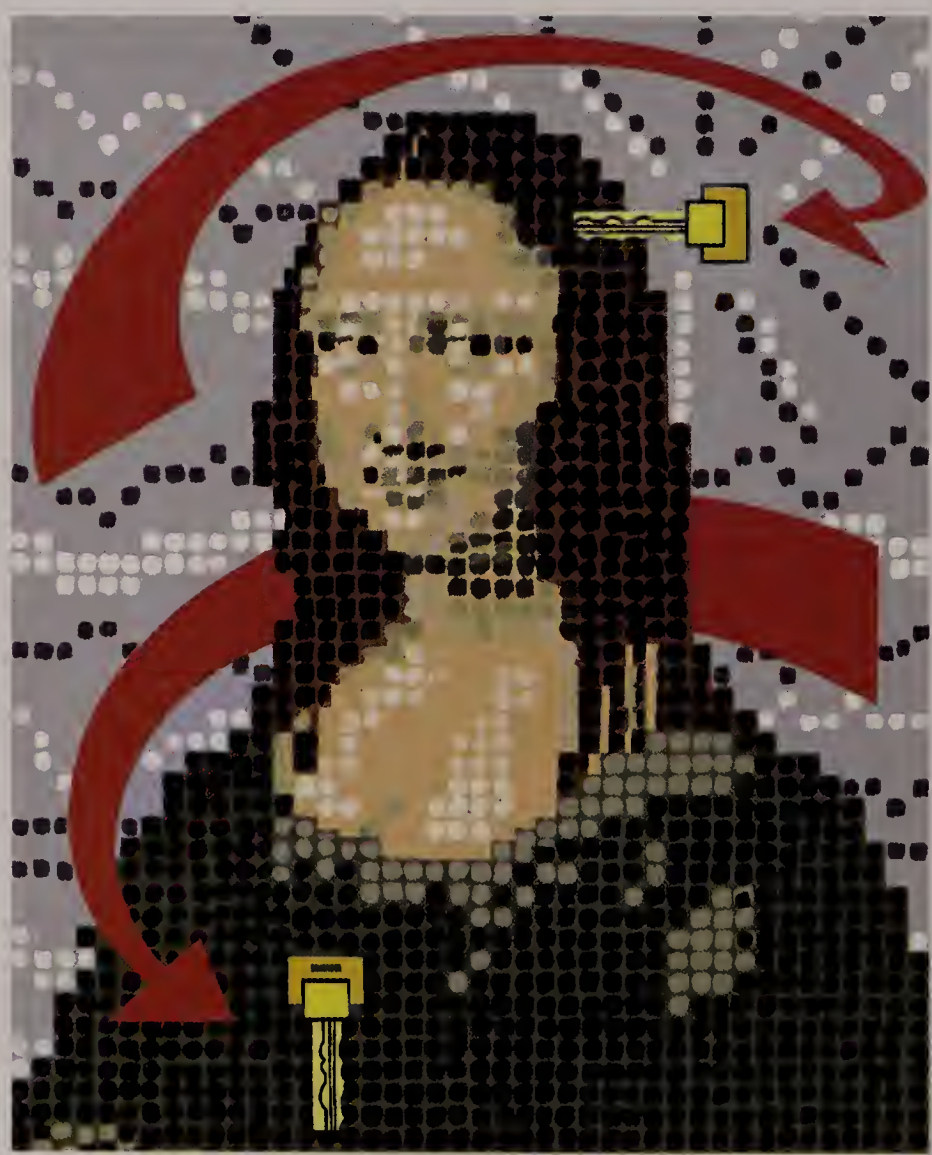
YOU'VE GOT HORDES OF NEW CUSTOMERS AND SUPPLIERS CLAMORING TO DO BUSINESS WITH YOU OVER THE NET. BUT ARE THEY WHO THEY SAY THEY ARE? **BY FRED HAPGOOD**

Proving Grounds

The promise of Internet commerce is that of buying and selling in larger marketplaces for lower costs. Everybody agrees this would be a good thing. But the reverse of the coin is that predators and incompetents enjoy the same low barriers to access and enlarged field of operation as honest merchants and customers. And right now there is no easy way to tell a good partner from a bad one. As the *New Yorker* cartoon put it: "On the Internet, no one knows you're a dog."

Not only does exposure go up on the Net but safeguards go down. Governments—the authorities buyers and sellers usually rely on for protection—are not as helpful in cyberspace as elsewhere. Buyers falling for deceptive advertising or sellers collecting bad IOUs might be faced with a choice between suing the perp in a distant jurisdiction under an alien set of laws (if indeed he can be located at all) or eating their losses. Perhaps more than any other marketplace, the electronic marketplace runs according to the law of caveat emptor.



Several efforts are underway to make the Net more friendly to honest commerce by finding alternatives to state-enforced regulations. Most of these efforts rest on a clever encryption technology in which documents are coded and decoded with two keys instead of one. These pairs of keys are complements: Texts encrypted using one can be decrypted only by using the other, and vice versa. If Alice wants to receive secure transactions, she gets the appropriate software, generates a pair of keys, publishes one—perhaps by hanging it on her Web site—and keeps the other secret. Alice's correspondents can then encrypt their letters to her with her published key, confident that those letters can be read only with the key that Alice keeps secret. The same system can be run in the other direction to sign documents: If encrypted text can be decrypted with Alice's published key, it must have been encrypted with her secret key, which only she controls.

Or so one hopes. The problem with this system is that the person who has published Alice's key is not necessarily Alice. Perhaps Charles has made a fake version of Alice's Web site, complete with a fake key, tricking Alice's correspondents into encrypting their letters with a bogus public key. The possibilities for trouble are legion.

One early solution to this problem was the creation of a "web of trust," in which Alice asks people who know her personally to encrypt (sign) copies of her public key with their secret keys. This way, when Bob—who does

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not know Alice—wants to send her a message, he first looks through these signed files for someone he knows who has passed his or her key to Bob earlier, under secure conditions. Carla might do. Bob then uses his own trusted copy of Carla's public key to decrypt Alice's public key, in the process establishing both that Alice is trustworthy and that the key published as hers does in fact belong to her. He uses the trust he has in Carla to establish trust in Alice's key. Thereafter, he can add Alice to his web of trust.

Trust webs can be organized quickly for very little cost, but the solution is inflexible—if a private key is stolen, it is hard to get word out to everyone relying on it—and it scales poorly. In theory, a better idea is to have a large central institution, something like a bank, guarantee the connection between a key and a person. Then, if a secret key is stolen or compromised, a new set of keys can be published with a single communication.

Alice would qualify for this guarantee by sending in her public key, together with evidence of her identity, such as a photocopy of a passport or a notary's affidavit. The institution would then encrypt her key with its private key and hang it in a directory accessible to the public. Thereafter, persons needing Alice's public key, either to send Alice a letter or to check on a digital signature, would get it by finding the "Alice" file in the institution's server (or somewhere else) and decrypting that file with the institution's public key. Any file that can be thus decrypted can be considered "endorsed" by the institution, since only the institution controls its private key.

Such institutions could provide protection against many species of risk. A Web business that requires its customers to be registered lowers the risk of shipping goods to con artists operating under pseudonyms. Buyers who require their vendors to be registered lower the risk of sending payments to decoy storefronts. (Such buyers would ask the certifying institution if the IP address of the Acme Products Web site to which they are about to send money matches the one given by Acme Products at the time of registration.) Organizations that require anyone interacting with them through the Internet to be registered lower the risk of infiltration by characters hostile to their missions.

In theory, any institution or organization, from a college to a Better Business Bureau to an organized crime syndicate, can start signing public keys, either for free or for profit.

The standard for proving identity might be as low as mailing in a photocopy of a driver's license or as high as having to show up at the authority in person. Any of a long list of attributes besides key ownership can be "bound" to a given identity, including credit ratings, customer histories and professional accreditations (and IP addresses, of course). In theory, any institution or organization, from a college to a Better Business Bureau to an organized crime syndicate, can start signing public keys, either for free or for profit. These authorities could be arranged into hierarchies, with national authorities signing the keys of local ones and internationals signing the keys of nationals.

However, while the market is well-defined, the actual creation of practical certification services has been slow. The U.S. Postal Service, the American Bankers Association and CommerceNet, the online commerce consortium, all have pilots in this area. In what is perhaps the first major commercial initiative, RSA Data Security Inc. (*http://www.rsa.com*), has spun off a new company, VeriSign Inc., to sell and support the development of certification services. (RSA owns the patent on the two-key system.) Web Augustine, VeriSign's vice president for marketing, says his company is hoping to sell into the Internet commerce, online services, EDI, groupware and client/server application-development markets. The current plan is to require businesses to present articles of incorporation and the appropriate business licenses before VeriSign will agree to sign their public keys. Individuals will be asked to present three items of identification to a notary. The company also plans to support the resale of certification services by a wide range of associations and organizations, according to Augustine.

In theory, all these services could be supported by passwords. But in real life, juggling more than a few discrete passwords is a nightmare, so their use is kept to a bare minimum. This lack of security has its well-publicized downside, but it has played a part in keeping the Internet anonymous, anarchic and generally interaccessible. For the most part, everybody can go everywhere.

In essence, certification authorities make the protection offered by passwords cheap, easy and flexible. And they raise the prospect of a very different kind of Internet, one in which buyers can set their browsers to avoid Web sites that have not been in business long enough for comfort, and Web stores can refuse buyers whose credit ratings are sub-par. The technology also makes it easier for organizations to set aside special services or products for members-only access. It makes it cheaper to build a door, and in doing so, lowers the cost of walls. WM

Fred Hapgood is a Boston-based technology writer. He can be reached at hapgood@pobox.com.

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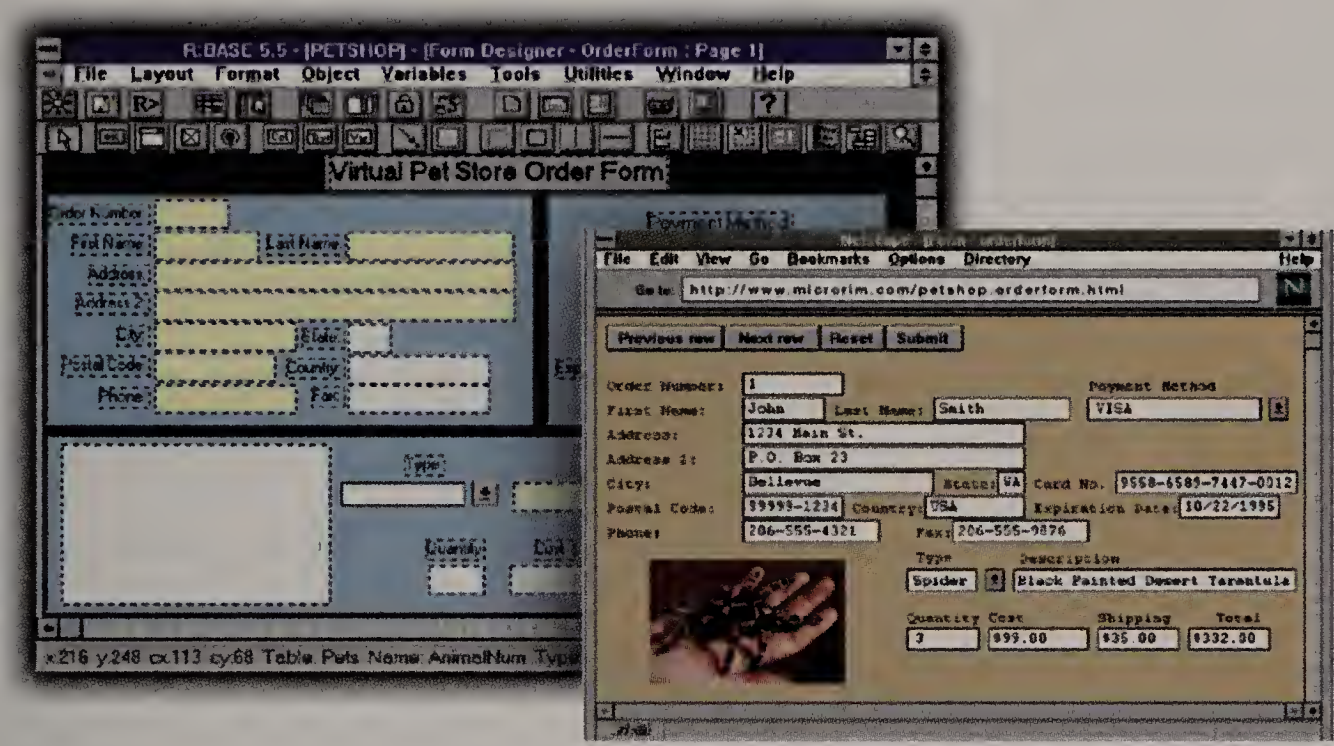

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LOOKING FOR A FEW GOOD APPS

BY LEIGH BUCHANAN

Banc One is testing its assumptions about electronic commerce with a series of highly focused pilots meant to serve the few right now and the many down the road

What is it about the World Wide Web that makes normally level-headed companies forget all the stuff they've been preaching for years? Consider the Tenth Commandment of Corporate America: Thou shalt not apply technology for technology's sake alone. But along comes the Internet, and suddenly everyone from hovercraft manufacturers to gourmet-coffee franchisers is knocking each other down in the furious rush to get that home page out there, whether their customers give a damn or not.

Which is what makes the strategy being pursued by Banc One Corp. of Columbus, Ohio, seem not only smart but downright refreshing. As late as last November, the company's Web site (*http://www.eft.bankone.com*) was something of a snooze: an unadorned logo followed by links to electronic-commerce information and assorted press releases. (At press time, the site was being substantially upgraded.) But what's happening behind the home page is considerably more interesting: Banc One is conducting a series of R&D projects aimed at creating Internet products and services that customers—particularly business customers—actually want and can use.

"We're coming at this from a very controlled, learning-experience standpoint," says David Strider, president of Banc One POS Services Corp., which administers credit-card processing and electronic-payment services for the company. "We want to maintain our focus on a small, manageable set of applications that are of immediate use in the marketplace." The idea is to nurture the corporate Internet strategy in a kind of petri dish, where executives can examine over time the growth and vigor of select approaches to electronic commerce. "Because it's still a developing technology, we

PHOTOGRAPHY BY TED RICE

DAVID STRIDER and SANDRA BEETNER: Approaching Internet commerce as a learning experience

need to make sure we are getting out of it the proper experiences and garnering the proper results," Strider says.

To accomplish this, in November Banc One created a commercial electronic commerce group, culled from various corporate departments and affiliates and led by Vice President of Product and Marketing Sandra Beetner. The group's mandate for the next 12 to 18 months is to undertake a series of highly targeted pilots involving the Net and other technologies and then examine how those applications can be rolled out to a broader marketplace. Some pilots are already underway, including a library procurement system for subscription-services company RoweCom Inc. and a check-imaging and retrieval application for corporate and broker customers that runs over the Net. Their success has generated considerable interest—and a few modest proposals for other projects—from a number of Internet-bound companies. Banc One's participation in groups like CommerceNet and the Financial Services Technology Consortium has further raised the company's profile.

"The order in a lot of other organizations has been 'Gosh, we've got to do something over the Internet. What can we do?'" says Lucy Kennedy, a member of the marketing department who was recently appointed to oversee development of the corporate Web site. "We're starting with a whole lot of applications and product ideas and then looking at distribution channels."

That strategy is exactly right, according to KPMG Peat Marwick partner Charlotte Wingfield, who predicts that targeted business applications will "ring the cash register sooner" than more-general consumer-directed services. "If you focus on bringing content to individual business situations instead of on standardized services [like electronic home banking] that are supposed to appeal to everyone, you'll be in a much better position on the playing field," she says.

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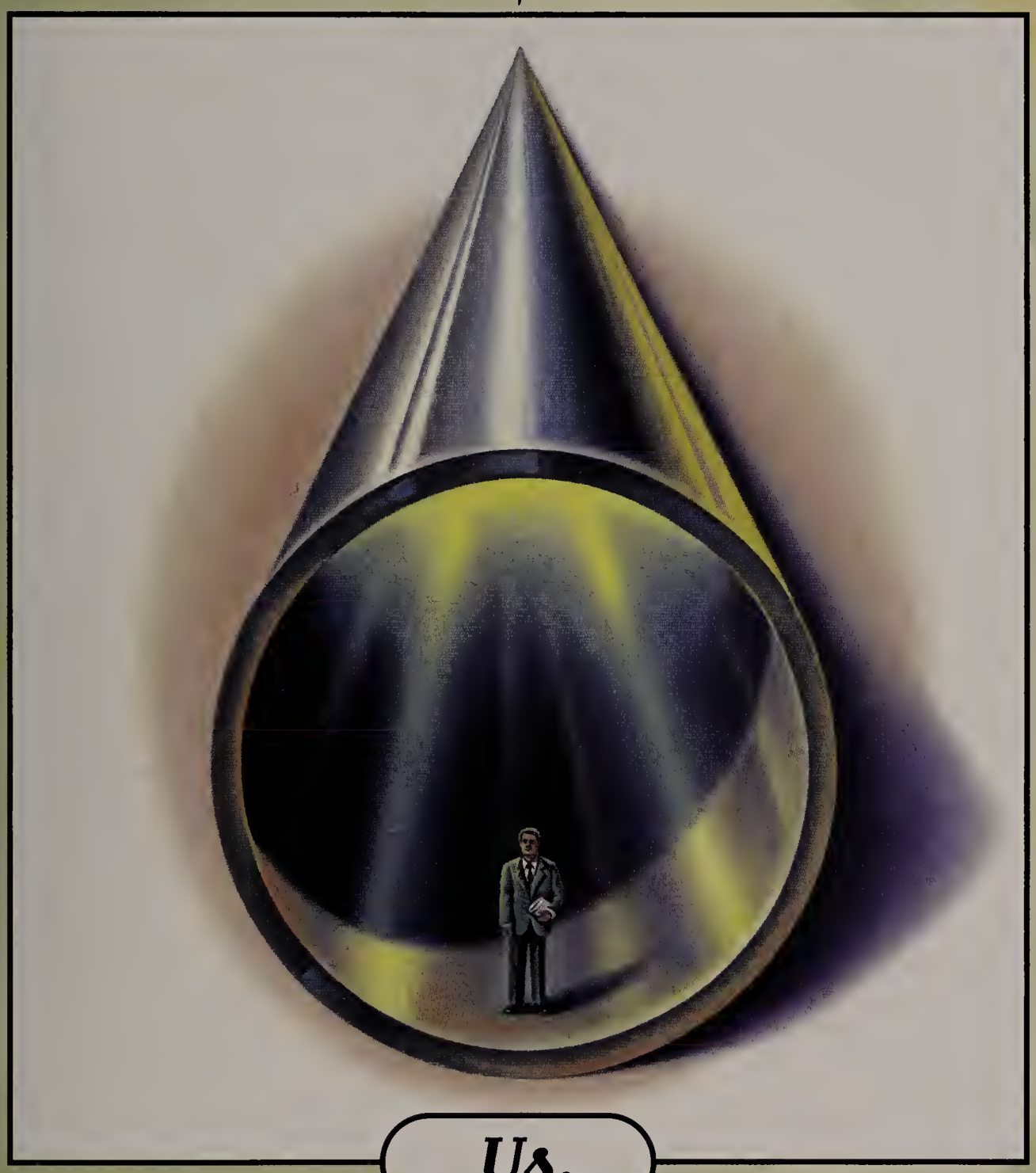

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The electronic commerce group is Banc One's first effort to formalize what up until now has been a collection of ad hoc projects sprinkled around the organization under a handful of champions. The first of those champions was Group Product Manager for Electronic Services Steven K. Dieringer, who brought the Internet itch with him when he joined Banc One three years ago. "I came from a telephone company where I had Internet access, and I wanted to stay in touch with my e-mail pals around the world," says Dieringer. "So when I came here I got a simple dial-up account with a local provider, and I also registered the Banc One [domain]. In fact the Banc One [site] is still sitting on my desk."

At first, Dieringer followed the maturation of the Web with largely academic interest. But when he saw CommerceNet coming together in 1994, "I realized the world was starting to change," he says. He urged Banc One to join the fledgling consortium and began bringing in Net experts such as Glenn Kramer and William Wong to educate top managers.

It was also at CommerceNet that Banc One began exchanging long, lingering glances with Open Market (*http://www.openmarket.com*), a developer of Internet commerce solutions with a rising reputation. "We waltzed for a couple of months and then decided that they were a good partner to do business with," says Dieringer. The two companies drew up a game plan that included assumptions about how Internet commerce would evolve over the next few years and ideas for pilots that would test those assumptions.

Banc One's role in such projects is obvious: Where business is conducted, there must be money; where there is money, there is usually a bank. But Banc One lacks the in-

A SUBSCRIPTION FOR CHANGE

RoweCom's Internet-based procurement system makes magazine ordering less of a hassle

For 15 years, Richard Rowe ran a company that spent $2 million annually on leased lines connecting clients with the corporate mainframe. So when he founded a new firm—RoweCom Inc.—two years ago, "I wanted to avoid getting into a situation where a large proportion of our revenue was going to the phone company," he says.

RICHARD ROWE

Rowe's new company, like his old one, facilitates the purchase of journal subscriptions by libraries and research institutions. But unlike traditional subscription agencies, which act as intermediaries for these mass transactions, RoweCom has embraced the Internet as a means to directly connect buyers and sellers. As a result, customers using the RoweCom system can save 5 to 7 percent on their periodicals orders—sometimes more, as the University of California at Berkeley proved recently. (The institution, which began piloting RoweCom's system last fall, has seen savings of 7 to 9 percent on purchases made using the service.) "In addition to the labor savings and the [reduced] aggravation, they're looking at real cash," says Rowe.

Here's how the system works: The client library uses RoweCom-developed software to request a subscription, which travels over the Internet to a Banc One server (currently residing at Open Market). The server then forwards order information to the publisher and payment information to Banc One, which provides the automated clearinghouse piece (debiting the buyer's bank and crediting the seller's).

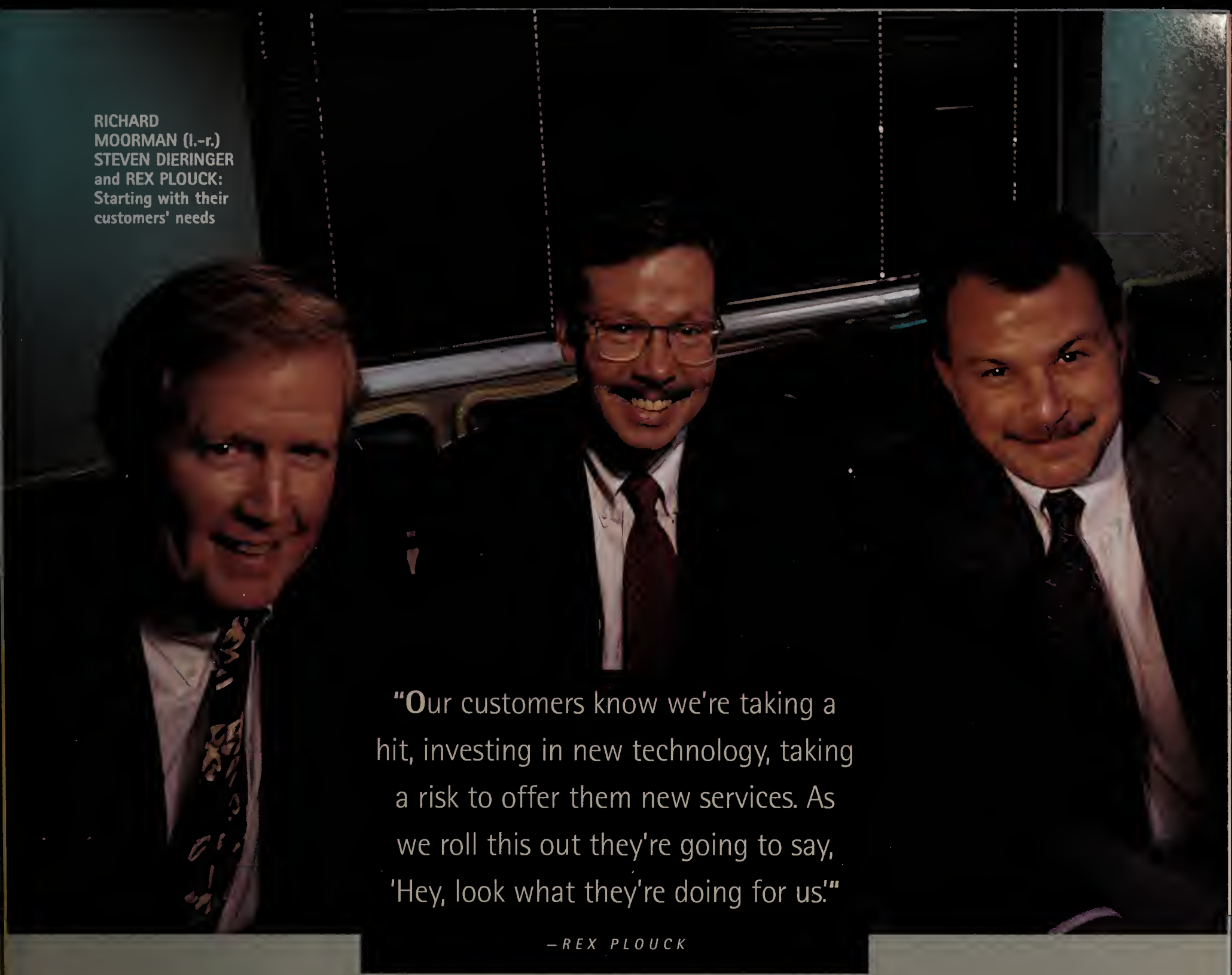
Because RoweCom's costs are 75 percent less per subscription than those of a traditional service agency, it can charge its customers a low flat fee, part of which is passed to Banc One. Banc One, in turn, pays Open Market, which handles security and other technical issues.

So far a dozen institutions are piloting the system—dubbed Subscribe96—and many more are expected to sign up this year. Libraries are ideal early adopters for this type of application, according to Rowe, because they are already comfortable using public networks. "Over the past few years, the Internet has become the value-added network of libraries," he says.

While Rowe has offered to license the system to other subscription services, he doubts they will be sufficiently nimble to exploit it. He sees greater potential outside the industry, particularly among companies that conduct numerous similar transactions over long periods of time. "I could see this working in any business-to-business relationship—auto parts, hospital supplies, you name it," he says. "Anyone who is looking to reduce the cost of acquisition has got to love it."

—L. Buchanan

PHOTO OF ROWE BY MARK ALCAREZ



RICHARD MOORMAN (l.-r.) STEVEN DIERINGER and REX PLOUCK: Starting with their customers' needs

"Our customers know we're taking a hit, investing in new technology, taking a risk to offer them new services. As we roll this out they're going to say, 'Hey, look what they're doing for us.'"

—REX PLOUCK

frastructure to enable secure Internet transactions single-handedly, so Open Market is creating and operating the technology piece until Banc One is ready to take it in-house. "In one respect we're a technology partner, helping Banc One build its infrastructure," says Jonathan Guerster, vice president for financial services at Open Market. "But in another respect, we're a partner that goes with them hand in hand to their customers to see how we can fill their customers' needs. So we're building solutions for multiple players, versus building them specifically for Banc One."

Keeping that focus on the customer is especially crucial for Banc One, which last year did an abrupt organizational about-face after experiencing its first earnings decline in a quarter century. Long known for its aggressive acquisition of regional banks—and for then leaving those banks to essentially do their own thing—the corporation embarked on a major centralization effort aimed at standardizing products, eliminating redundancies and speeding up decision making.

The challenge, as authority is sucked back into Columbus, becomes maintaining a close relationship with customers in Arizona, Texas, Wisconsin and the nine other states where Banc One does business. Being able to offer them customized services over the Internet is one of many ways the company hopes to do that. "As we make these changes from a regional to a national [bank], from the regional customers' view there might be a loss of some of the closeness and service," says Beetner. "The Internet brings that right back in a very direct and personalized way."

For the immediate future, those benefiting most from the bank's Net initiatives will be its pilot partners—early adopters who believe the Internet can transform their businesses but need some help making it happen. With some exceptions, these are not the large, sophisticated corporations already proficient with EDI, but rather the small to mid-size merchants that feel comfortable using the Internet for e-mail and—not coincidentally—map into Banc One's existing customer profile. "We are trying to leverage our existing customer base aggressively," says Beetner. "But because this type of development is opportunistic, I would guess that more than half our pilots will involve people who have

BRUCE LUECKE and LUCY KENNEDY: Bringing the home page up to snuff

come to us or whom we have met in the process of our [electronic-commerce] research."

As for pilot applications, Banc One sees the greatest immediate potential in those that facilitate many-to-many, as opposed to one-to-many, business relationships. For this reason, it is focusing on what Dieringer calls "communities of interest"—specialized pairings of buyers and sellers whose transactions would translate efficiently to the Net. "We are trying to identify the needs of various groups that do business with each other or that need to communicate with each other, and facilitate that through an open network," says Dieringer. "The idea is that we, as a bank, are a major pillar of the community, and as such, we should be out exploring ways to tie other members of the community together."

The first of those applications is an automated order, payment and claims system for libraries and publishers that runs over the Internet. (See related story, Page 34.) Banc One's partner company, RoweCom (*http://www.rowe.com*), developed the front end for such a system on its own; in early 1995 it sent out RFPs to 20 banks seeking someone to supply the financial piece. Banc One "was head and shoulders above everybody else in terms of speed and responsiveness," says RoweCom President and CEO Richard Rowe. "They understood what we wanted and offered to do it within our time frame, which was very short."

Richard Moorman, assistant vice president of electronic commerce, and an old hand at conventional EDI applications, took charge of the project in April. By mid-June the three players had a test model running flawlessly, and RoweCom began beta testing in September. (Such abbreviated time lines are typical of projects measured in Web weeks which, according to Dieringer, "are equivalent to one to two Cobol man-months.") Now Banc One is exploring other potential uses for the system: "Any place where there's a common need and large numbers of buyers and sellers, you could have this model," says Moorman.

The other ongoing pilot absorbed by the electronic commerce group is a check-imaging application, initially aimed at some of Banc One's brokerage and cash-management customers. Currently, Banc One uses dedicated lines to send some large clients thousands of check images every night to review for mistakes or discrepancies, at a cost to the customer of tens of thousands of dollars for hardware and software. Meanwhile, companies not using the imaging service must make do with copies of checks that are faxed or overnighted to them. But by leveraging the Net for distribution, "we can just say, 'get on, go to this home page, log in and get access to

your images," says Rex E. Plouck, the product manager handling the application. "It will help us get into more small businesses, and it makes life easier for our current customers."

The imaging application may not generate revenue in the short term, but it could well make Banc One more competitive over the long haul. "We don't do many things at Banc One without showing a payoff," says Plouck. "[Our customers] know we're taking a hit, investing in new technology, taking a risk to offer them new services. As we roll this out they're going to say, 'Hey, look what they're doing for us.'"

Another idea the company has toyed with is for a university bill-paying system, according to Dieringer. Many universities collect payments for things like tuition, parking tickets and even telephone use; students drop their checks in lockboxes or "queue up outside someone's office and mob them a couple of times a month," he explains. Under the Banc One model, a university could leverage the fact that many students can already access the Internet from their dorm rooms. The school's accounting department would alert students by e-mail that their invoices are accessible at a certain URL; the students could pull up the charges, view them, and by simply hitting a button transfer funds from their own bank accounts to the university's. Banc One has created the specs for such a system and demonstrated it for Ohio State University; several utility companies are also intrigued by the model, Dieringer says.

On the consumer side, Banc One has been working with the Financial Services Technology Consortium on an electronic check that could move over the Internet. Such checks would include a "digital signature"—essentially an authentication device to prevent fraud. Last fall, the consortium demonstrated how the check would work in an actual Internet business transaction: in this case, buying a teddy bear for Vice President Al Gore.

Like most organizations, Banc One stresses that these and other Internet initiatives are just one part of a broad effort to evaluate, deploy and hopefully integrate a number of emerging technologies. And like other banks, it expects its involvement will help speed the pace at which organizations cozy up to full-fledged electronic commerce. "I was speaking with some of our officers recently about our role as a facilitator of trust," says Beetner. "Financial institutions participating in this is almost synonymous with legitimizing [it]." WM

Leigh Buchanan can be reached at buchanan@cio.com.

AN INTERFACE-LIFT

Banc One is gussying up its Web site for consumer traffic

As recently as last November, Banc One's home page was a pretty drab affair, especially when compared with some of its fancy-pants cousins, like Wells Fargo and Bank of America. Because the company had been concentrating on business-to-business applications, "we had at best, a meager presence," admits Bruce Luecke, the company's vice president of alternative delivery. "We're in the process of upgrading that considerably."

In discussing his organization's Web site, Luecke alternates between grand designs ("anything we offer today we should be able to offer over the Internet") and cautious realism ("there's no huge push from our customers to do this"). Like most companies, Banc One views the Internet as just one of multiple distribution vehicles, all of which must be developed in order to satisfy an increasingly choice-hungry public. "You can't step back and say, 'The electronic delivery channels are not going to happen,' or 'I'm going to wait until they're profitable' before doing anything with them," Luecke explains. "However, I don't necessarily feel pressure to respond to every single thing [our competitors do] either."

Ultimately, Luecke would like to see Banc One's Web site (*http://www.eft.bankone.com*) become "the first access point people go to when they're thinking about anything that involves money, including a reference for things we don't have a core competency in." For example, someone visiting Banc One's site for information on financing a car might find links to objective reports on various makes and models.

"Just helping someone do their day-to-day banking online is not the end game," says Luecke. "If we stop there we haven't done a very good job of helping our customers."

Key to Banc One's Web strategy is the recent appointment of Webmaster Lucy Kennedy, a member of the marketing department, to oversee the site's development. Kennedy—who is new to the Web but learning rapidly through immersion—will create a plan for administering the site and ensure the orderly introduction of new services and consistency of look and feel. "There's a lot of excellent ideas percolating up all over the place," says Kennedy. "My mission is to smooth out the [presentation of projects] from multiple business units without stifling that."

—L. Buchanan

Foreign Entanglem

Making it in the global marketplace means more than just hanging out your shingle on the Web. Companies serious about using the Internet to rustle up international business will have to deal with some very sticky issues.

BY FRED HAPGOOD

Perhaps the biggest news to emerge from the first year of Web-based commerce has been the surprising strength of exports. Where overseas cultures might have been expected to lag behind the United States, they instead seem to be early adopters. The Internet Shopping Network reports that 40 percent of its customer base is overseas, and Jeanne Dietsch, vice president of Internet commerce research company ActivMedia Inc., calls that figure fairly representative. "Many companies have tripled their exports by going online," she says.

Looking back from Monday morning, the logic behind the surge seems simple: The dollar is cheap, vendors and distributors in other countries are frequently hobbled by myriad regulations, and U.S. marketing and Web-site design skills are cutting-edge. Internet commerce values the predictability of known brands, and American culture and its brands are, in general, broadly familiar overseas. Added together, these factors mean that when an organization goes online, it should be prepared to conduct itself like a global multinational business—regardless of its actual size.

Preparedness will take many forms. On the design level, since many overseas users pay their phone companies by the minute and their Internet access providers by the byte, simple, fast-loading pages are especially important. Marketing and help files need to be written for—and perhaps reviewed by—people with limited English-language skills, or whose English is different from our own. Overseas customers need more help files; for example, there should be files for shipping, currency and payment mechanisms. They also need more orienting: Address information (of the phone, fax, e-mail and postal varieties) for the business

ILLUSTRATIONS BY DOLORES FAIRMAN

ents

and its representatives should be complete and detailed, and should include people's names. It might not be a bad idea to post a map showing the company's location.

Intracultural references need to be filtered out and multicurrency price listings and unit-conversion tables prominently posted. (Unfortunately, price changes due to fluctuations in exchange rates must be entered manually. In theory, a program could recalculate prices in an online catalog automatically, by polling the currency markets, but I have been unable to find such a program.) CommerceNet, the online-commerce consortium, is funding the design of search engines that convert units automatically, so that a customer calling from the United States will see a result formatted in terms of feet, while another calling from Germany would see the same result in meters. Webmasters might wish to keep an eye on this research. In addition, expressions of time, such as office hours, should be presented in both EST and GMT.

Ideally, Web-site text would be written in several languages (consider, as an example, the Gospel Communications Network at *http://www.gospelcom.net*, which even comes in Tagalog). If costs make fully multilingual sites impractical, webmasters might consider at least posting translations of the most important help files. One barrier to such accommodations is that only a minority of the world's languages use the Roman orthography that most processors and browsers expect. An Israeli company called Accent Software International Ltd. is addressing this problem with an orthographic metalanguage that so far supports 30 linguistically distinct scripts (Turkish, Greek, Arabic, Hebrew, etc.). All scripts can be read with Accent's viewer, which the company supplies free. Webmasters wishing to carry files written in non-Roman orthographies might hang this viewer off their servers for customers to download. Once a viewer is installed in the user's browser, he or she can read files written in any orthography (so long as it was written originally in the Accent metalanguage).

World Tools

A sampling of products and services that can help your Web site go global

COMPANY	URL	PRODUCT
Alis Technologies Inc.	*http://www.alis.com*	Alis's new multilingual browser uses Spyglass Mosaic technology to provide interfaces in German, French, Italian and Russian. Menus, messages and online help appear in the language selected by the user.
Argus Technologies Inc.	*http://www.argusmap.com*	The Argus Map Viewer enables users to quickly create and revise customized maps on a Web site.
Bitstream Inc.	*http://www.bitstream.com*	Cyberbit is an international font that includes all typographic characters for most of the world's major languages. Web publishers can use it to maintain a uniform look for multilingual pages and to ensure that viewers will see documents as they were created.
Globalink Inc.	*http://www.globalink.com*	The recently announced Barcelona technology provides real-time translation of a number of languages over the Web, e-mail or Lotus Notes. Interested parties can perform a sample translation at the company's site. Standalone software programs will be released early this year.
Interpreting Services International Inc.	*http://emporium.turnpike.net/~SS/ISI.html*	ISI will create multilingual versions of a company's Web pages and link them to the original.
Rancho Park Publishing	*http://www.earthlink.net/~rpptranslation/*	Rancho Park's WWWeb Translation Services enables Web visitors using Mosaic or Netscape to read content in French, Italian, Korean, Japanese, Chinese and other languages.

But these details of site design are only the first chapter in a large volume of challenges that come with stepping outside the highly standardized American commercial environment. "Ever since I started advertising on the Internet, I have been getting replies from people across the seas," says one representative message posted to an Internet marketing list. "Since I don't know anything about the regulations for importing/exporting of goods and don't want to make my business too complicated ... I was wondering if it would be wise to state in all my online advertising 'USA inquiries only at this time.' I could just not respond to inquiries, but I think that would be unethical. Of course, I'd like the idea of increasing my market worldwide, if I understood international shipping and regulations."

Global business operates in 200-odd jurisdictions, each with its own mix of mechanisms and regulations for distribution, freight handling, marketing, accounting, credit and dispute resolution. The expectations and understandings that define a good business relationship vary widely among cultures and are usually unarticulated. Even if all parties have a good grasp of a common language, definitions and usage conventions for the same term can vary; problems are even more likely if the different parties in a transaction are using different languages or different levels of competence in the same language.

Finally, unlike conventional exporters, online traders cannot easily accumulate expertise by concentrating on one country at a time. When a Web site opens for business, anyone anywhere in the world can and will walk in, bringing a vast number of unresolved questions.

Suppose a transaction requires finding and purchasing supplementary services—such as legal services or customs brokers or fulfillment or advisory services—in the buyer's country. Where does the online merchant begin? A growing number of sites support international yellow pages, but they don't cover all countries, and, of course, anyone can buy an ad. One possible solution is to contact a due-diligence service such as Standard & Poor's Corp.; another is to order a World Trader's Data Report from a regional office of the U.S. Department of Commerce. Neither service is cheap, however (the WTDRs go for about $100 each).

Be cautious in extending credit even to established customers, since collections in faraway jurisdictions are seldom simple.

There is some consolation in that both law and custom place the burden of complying with local import regulations on the buyer rather than the seller. (Except in the case of our own export regulations, of course.) Judd Kessler, a trade lawyer in the Washington office of Porter, Wright, Morris and Arthur, believes that, to date, a seller is adequately protected if the purchase contract and the Web site clearly place sole responsibility for clearing customs with the buyer. (This section might be an especially good candidate for translation.) On the other hand, agreements to represent a product or service inside a foreign country should be entered into very carefully, since such arrangements do carry liability, specifically exposure to taxation. Finally, Kessler warns Web merchants to be cautious in extending credit even to established customers, because collections in faraway jurisdictions are seldom simple.

Documents addressing these and other export issues can be viewed at sites maintained by the Small Business Foundation and The Export Legal Assistance Network. Both sites run off a server maintained by the Network for Excellence in Manufacturing, a considerable resource repository in itself. The International Trade Law Project at the University of Tromsö in Norway is also rich in studies and texts.

Though these files are useful, they only nibble at the difficulty of mastering such a new and complex set of business relations. Recently, a consortium of organizations—including the U.S. Chamber of Commerce, General Electric Co., AT&T, Microsoft Corp., Dun & Bradstreet Corp., Chase Manhattan Bank, Digital Equipment Corp. and a Canadian software company called SHL Systemhouse Inc.—announced a systematic and comprehensive approach. The consortium, known as The Global Business Alliance Inc. (GBA), has started an online service called IBEX (International Business Exchange) that walks members through the process of forming international business relationships, one step at a time.

If costs make fully multilingual sites impractical, webmasters might consider at least posting translations of the most important help files.

A user logging on to IBEX for the first time is helped to prepare for participation in all the phases of international trade, including building a company identity, preparing a buy/sell offer, defining the structure of the interaction with interested parties and negotiating. Each phase is designed around lists of options presented in standard forms, clicked from pulldown menus or picked out of databases by using keywords. For instance, users are told to define "company profile" in terms of annual sales, net worth, number of employees, years in business, product categories and so on. Thus, all IBEX users, no matter what culture they come from, know what a "company profile"

means within the IBEX environment and what to expect when they request one.

The "offer creation" section of IBEX includes sequences for detailing issues such as expiration conditions, geographic restrictions, respondent qualifications and payment methods. The "process" section asks users to define the flow of steps they would like to see as negotiation proceeds: the points at which given documents should be exchanged, specific clauses (i.e., maintenance) completed, and supplementary agreements—perhaps with financial organizations or regulators—concluded. Again, this complex information is organized as a sequence of standardized pulldown menus.

Once a member has framed an offer, the IBEX server seeks buy/sell matches and brings the parties together. They then negotiate by working through the menu sequences again and again, rewriting each other's offers. They can, of course, negotiate over process issues as easily as product or service issues. Supplementary services might also be found, qualified, and contracted with through IBEX.

Prices are determined by function, not time or bandwidth: $5 to $10 for an offer; $3 for a response. Signing up costs $250, and a demo can be downloaded from the Web site.

But IBEX has the same chicken-and-egg problem as any online service: If its only reason for being is connecting with other users, what's the motive for the first wave to stick around? In the short run, IBEX hopes to attract members by offering business services: access to Dun and Bradstreet, the Global Electronic Yellow Pages of the world's telephone companies, catalogs, trade finance programs, EDI, and more. In the mid-term (the next 12 months), GBA expects that the frustration of dealing with export issues will create a market for IBEX among the 50,000-plus commercial Web sites already soliciting export orders or fielding inquiries from overseas. The U.S. Chamber of Commerce is also promoting the service to its 3,000 chapters, which should bring in many users. The GBA says it expects 100,000 subscribers by the end of 1996 and 1.5 million worldwide in five years.

The expectations and understandings that define a good business relationship vary widely among cultures and are usually unarticulated.

Right now, Internet commerce runs the risk of becoming identified with American vendors. That's potentially troubling. International Internet trade, especially in information services, affects (and is affected by) a long list of political, economic and cultural issues, ranging from the control of content to consumer protection, distributor licensing and regulation, enforcement of contracts, tax evasion, and libel and slander laws, among others. It is possible that, as the volume of trade grows over the next 10 years, most of the world's nations will find these problems rising to the top of their policy and political in-boxes. The prospect for a stable resolution of these issues won't be advanced if they get dragged into a culture war.

In the long run, however, Internet trade is creating a new class of business that views the globe as an integrated market, a single entity. Very few people in the history of the world, except perhaps astronauts and the top executives of some of the largest multinationals, have had the motivation or the position to see the world in this way. As their numbers grow, so will the contributions of these new internationalists to all the world's cultures. WM

FINDING IT ONLINE

Accent Software International
http://www.accentsoft.com

ActivMedia Inc.
http://www.activmedia.com

CommerceNet
http://www.commerce.net

The Export Legal Assistance Network
http://www.miep.org/elan

IBEX
http://www.nstn.ca:80/ibex-gba/gbaintro.html

International Trade Law Project
http://www.ananse.irv.uit.no/trade_law/nav/trade.html

Network for Excellence in Manufacturing
http://www.miep.org

Small Business Foundation
http://www.miep.org/sbfa

Worldwide Yellow Pages
http://www.yellow.com

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With its universal accessibility and unfettered approach to information, the Internet

Hostile Ex

BY E.B. BAATZ

and unbridled ways of doing business are vulnerable as never before.

is a flying cannonball aimed at all kinds of long-established power structures. While

changes

at least one player in the following story would disagree that it represents a true battle between the old and the new guards, two things are clear: Information will always flow toward t

This is a David and Goliath story. Pay attention, because you'll be hearing a lot of these as the Web develops.

The David in this case is Electronic Share Information Ltd. (ESI), a two-and-a-half-year-old British company with the ambitious goal of becoming the first full-fledged stock exchange on the World Wide Web. The Goliath is the London Stock Exchange, a 250-year-old behemoth with Internet plans of its own but also a hefty stake in the status quo. The conflict that arose between the two was either a clear-cut contract dispute, as the London Stock Exchange tells it, or an example of an old-guard firm doing its best to squash an innovative young competitor, the view held by some connected to ESI.

What no one disputes is the fact that the London Stock Exchange has been under increasing competitive pressure of late. In addition to ESI, several groups—including The European Association of Securities Dealers, which intends to launch an automated screen-based trading system, and Tradepoint Financial Networks, a new stock exchange that also delivers services electronically—have recently emerged to challenge its dominance. And the British press has been critical of how the venerable institution has reacted to those challenges: "In recent months, the Exchange's response to competition appears to have been no better than a series of public temper tantrums," commented a writer for *Financial Times* last September.

For the founders of ESI, the drama began with the arrival of some bad news on Sept. 4 last year or "Black Monday," as it is referred to in the company's brief mythology. ESI had been established in 1993 with the vision of becoming "in due course, and subject to regulatory approval, the world's first cyberspace stock market," according to cofounder and technical director Jack Lang. As a step toward that vision, ESI had created an Internet-based information service for private investors that was scheduled to launch on Sept. 8, 1995. To exist, the service had to be able to provide its customers with up-to-the-minute stock prices, and the only source of that data was the London Stock Exchange. Fortunately for ESI, the Exchange had agreed to supply the information and had already started doing so via a real-time feed to a pilot site that had gone up in May.

Then the news arrived at the firm's headquarters in Mount Pleasant House, Cambridge: The Exchange had reviewed its position and decided to discontinue the data feed. "It was completely out of the blue," says Hermann Hauser, the 47-year-old cofounder of ESI. "We were flabbergasted, and we were very depressed. If [the Exchange] was serious, then we'd be out of business."

From left: Hermann Hauser, Peter Wynn, Tomás Carruthers, Richard Lines and Jack Lang

That obstacles would appear on the road to revolutionizing a marketplace should not, perhaps, have surprised Hauser. After all, the Internet "threatens existing power structures," he contends. And as cofounder and chairman of one of Britain's premier PC companies, Acorn Computer Group PLC; vice president of research for European mammoth Olivetti Research Ltd.; and founder of nearly two dozen other high-technology companies, Hauser has seen those structures crumble before, notably with the introduction of the PC.

But when the entrepreneur and his friends (financial executive Peter Wynn and former University of Cam-

LONDON PHOTOS: FPG; STAFF PHOTO COURTESY OF ESI

Inside the London Exchange

"We were advised that we would have to publicize [the London Stock Exchange's action] ... because if we didn't we would be open to prosecution by one of our users for having misrepresented the service."
— Tomás Carruthers

bridge computer science professor Lang) dreamed up ESI, they were more concerned with security and with overcoming technological hurdles than with competitive threats. The three were convinced that the evolution of the Internet, combined with cheaper bandwidth and new mechanisms for conducting transactions online, would fundamentally change the way people do business. They also saw the need for new tools that would facilitate increasingly global financial trading—specifically, a stock exchange unbounded by time or geography.

So, with a few hundred thousand pounds' investment from Hauser and Lang, ESI was born in June 1993. Knowing that consumer confidence would be key to the new venture's success, Hauser took care to recruit a seasoned management board, including two veterans of the London Stock Exchange itself. Richard Lines, former investigations manager in the Surveillance Department of the London Stock Exchange, joined ESI as compliance director, bringing with him considerable expertise in secure trading. And Sir Kenneth Warren, the 68-year-old former chairman of the Trade and Industry Select Committee in Parliament and former chairman of the Computer Security Advisory Board for the London Exchange, was recruited to succeed Hauser as chairman of the board.

Another important hire was Tomás Carruthers, a young finance whiz who had been working in The City, London's financial district. In late 1994, Carruthers traveled to Cambridge to hear Lang's pitch. "I think I first reacted to the idea with educated skepticism," says Carruthers. "I was coming out of a corporate finance background and they had a technological vision, and you know the two are quite different." Nonetheless, Carruthers was sufficiently intrigued that he accepted a position as ESI's business development director.

Hauser, Lang and Wynn decided to start simple, by building a somewhat conventional Internet-based information service where subscribers could access stock price information, company financial news and analysts' reports. After they had established a user base, the plan went, they could explore the creation of a virtual, online stock exchange. ESI's board got busy raising another half million pounds or so from private investors and colleagues and started tackling the rigorous legal requirements imposed by Britain's financial regulatory bodies.

Systems development was the task of Lang and a coterie of consultants, who started off building a graphical interface that was accessible only with ESI's own software. But as the Web took off, ESI dropped the proprietary model in favor of one that could be accessed by Netscape's Navigator browser. "I don't think any of us, including Hermann and Jack, were prepared for the extraordinary growth in the use of the Web that happened last winter and spring," says Carruthers. "We watched the Web just grow and grow, and Netscape get better and better with an increasing installed base, [and] we saw that this was the way to go."

In its earliest incarnation, the ESI service would be able to offer information, but that was about it. Until the new firm could transact actual online buying and selling, it needed a partner to take customer orders and execute them in the London Stock Exchange using traditional methods. So they approached David L. Jones, founder and chief executive of ShareLink Ltd., a retail brokerage firm in Birmingham. Jones was a logical choice, Carruthers explains, because his company focused on using modern telecommunications to cut the costs of execution-only discount brokering.

Jones had started ShareLink in 1987, following government deregulation that shifted trading from the Exchange floor to the dealing rooms of member firms. But before that, he had fallen from grace with the powers that be after arguing that the London Stock Exchange should adopt an "order-driven" share-trading system like the one used on Wall Street. (In the order-driven model, stock prices fluctuate automatically, according to cus-

Renaissance Java

It all started in a coffee house....

When Electronic Share Information Ltd. launched its Web service at the Cyberia Internet Cafe last September, it was putting a digital-age twist on a 400-year-old tradition: Beginning in the 16th century, stock exchanges operated out of coffee houses.

"People just got together around tables, trading stocks, when some bright guy had the idea of writing down the prices," says Tomás Carruthers, ESI's director of business development. "Eventually there were so many people in the coffee shop and in the alleys outside that they had to put porters on the doors to control the flow of people in and out. Then the porters started charging a fee. And basically the people who paid the fee and got into the cafe became stock brokers and stock jobbers. And the rest of us stayed outside."

Carruthers drew on that metaphor when he announced the ESI Web site to the press. "My presentation was to say the Internet is just a massively distributed equivalent of a coffee shop," says Carruthers. "Let's all sit down inside the coffee shop and not be blocked out."

– E.B. Baatz

tomers' buy and sell orders. The London Stock Exchange applies the "market-maker" model, in which prices are set by member firms in response to supply and demand.) Now, after years of resistance, the order-driven model is gaining purchase in the Exchange, further increasing the pressure on that institution.

With Jones agreeing to take orders and enable portfolio-tracking over the Web, ESI prepared to roll out a pilot. On May 20, 1995, the company introduced a site offering free stock market information, such as stock charts, price histories and company data. By the end of August, 3,000 visitors were sufficiently interested in the service to register their names with ESI. Meanwhile, the company had negotiated the price-feed deal with the London Stock Exchange. With the key elements in place, the public unveiling of ESI's home page (*http://www.esi.co.uk*) was set.

Then, the Exchange announced its position. Without stock-price information, ESI would not be able to provide the service it had promised users, and that could lead to charges against it, according to the company's lawyers. "We were advised that we would have to publicize [the London Stock Exchange's action] ... because if we didn't we would be open to prosecution by one of our users for having misrepresented the service," says Carruthers. "So our best advice from counsel was that we would have to go public on this."

The company decided to proceed with the launch as planned, but also to make public the London Stock Exchange's position as an explanation for its own inability to deliver the information, according to Carruthers. On the morning of Sept. 8, company executives held a press conference announcing the new Web service at the Cyberia Internet Cafe near University College in London. (See related story, this page.).

At 6:50 a.m., Jones gave a radio interview to the *Today* program of the BBC. "What can you do if they simply say, 'You can't publish price information?'" the interviewer asked. "You can't, can you?" But Jones remained firm: "ESI has a contract in place that lasts for one year," he contended. "They are invalidly attempting to breach that contract, so we intend to go ahead."

Subsequently, at about 2 p.m. one week after Black Monday, the London Stock Exchange cut its price feed to ESI. ESI says the Exchange claimed that its press conference violated confidentiality clauses contained in the contract. On Sept. 13, the Exchange publicly refuted any suggestion that it had abused its position to deter competition and denied allegations that it had invalidly changed the terms of a commercial contract. At the same time, it began proceedings against Jones for defamation. (The Exchange declined *WebMaster*'s request for an interview about any of these proceedings. In a press release announcing the defamation suit, it described Jones's remarks as constituting "conduct detrimental to the interests of the Exchange.")

But for ESI, the public battle soon became a public victory. The Office of Fair Trading, a British regulatory body, began an investigation into whether the contract cancellation was "intended to distort, restrict or prevent competition." By Sept. 27, legal proceedings on both sides were dropped. The contract was renewed, and by the morning of Sept. 28 the Web-site feed was back in place. Exactly what form the settlement took is impossible to pin down, as the agreement stipulates that neither side disclose its terms to the press. Hauser and Jones publicly apologized, and Hauser told reporters that, in his opinion, the Exchange had not reneged on the contract or abused its market position.

Some members of the press, how-

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WEBMASTER

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If yes, please provide your business address below:

Company Name:

Address:

City: State: Zip:

1. Are you involved in management or development of World Wide Web utilization at your organization?

☐ Yes ☐ No

2. Which of the following best describes your title within your organization? *(Check one only)*

☐ 1. Webmaster
☐ 2. CEO, President, Owner, Partner, General Manager
☐ 3. CIO/VP of Information Systems/MIS/DP
☐ 4. Dir/Mgr of Information Systems/MIS/DP
☐ 5. VP/Dir/Mgr of Networking & Communications Systems
☐ 6. CFO/VP/Dir Finance/Controller
☐ 7. Consultant
☐ 8. VP/Dir/Mgr Accounting
☐ 9. VP/Dir/Mgr Engineering/Manufacturing
☐ 10. VP/Dir/Mgr Marketing/Sales
☐ 11. COO/VP/Dir/Mgr Operations/Administration/Purchasing/Human Resources
☐ 99. Other *(Please specify)* _____

3. What is your primary job function within your organization? *(Check one only)*

Technical Management
☐ 1. Webmaster
☐ 2. IS management
☐ 3. Networking/LAN management
☐ 4. Communications management

Corporate Management
☐ 6. Executive management
☐ 7. Marketing management
☐ 8. Financial management
☐ 9. Engineering management
☐ 10. Operations management
☐ 99. Other *(Please specify)* _____

4. Which of the following best describes your organization's industry or function? *(Check one only)*

☐ 1. Manufacturer of Computers, Communication or Peripheral Equipment
☐ 2. Manufacturer of other products/processes not included above
☐ 3. Finance: Banking
☐ 4. Finance: Insurance
☐ 5. Finance: Real Estate, Credit or Securities
☐ 6. Wholesale or Retail Trade
☐ 7. Government: Federal, State or Local
☐ 8. Military
☐ 9. Transportation: Land, Sea or Air
☐ 10. Education: College, University, Library, Secondary, Other
☐ 11. Health Care/Pharmaceuticals/Medical Services
☐ 12. Utility: Communications
☐ 13. Utility: Electric, Gas, Sanitation
☐ 14. Accounting or Legal Services
☐ 15. Online Product and Service Provider
☐ 16. Communications: Publishing, Broadcast, Advertising, Public Relations
☐ 17. VAR, VAD, Systems Integrator
☐ 18. Computer and Data Processing Services and Software
☐ 19. Business Services *(other than computer)*
☐ 20. Research and Development
☐ 21. Aerospace/Defense Contractor
☐ 22. Mining/Construction/Petroleum/Refining/Agriculture
☐ 99. Other *(Please specify)* _____

5. What is the total number of employees: *(Check one only in each column)*

	In your entire org.	At this location
1. >5000	☐	1. ☐
2. 1001-5000	☐	2. ☐
3. 500-1000	☐	3. ☐
4. <500	☐	4. ☐

6. What are the total annual revenues of your entire organization? *(Check one only)*

☐ 1. Over $1 Billion
☐ 2. $501 Million to $1 Billion
☐ 3. $101 to $500 Million
☐ 4. $25 to $100 Million
☐ 5. Under $25 Million

7. Approximately how much will your organization spend in the next 12 months on computers, software, equipment and services for World-Wide Web implementation? *(Check one only)*

☐ 1. More than $1,000,000
☐ 2. $500,000 to $999,999
☐ 3. $100,000 to $499,999
☐ 4. $25,000 to 99,999
☐ 5. Less than $25,000

8. In which ways are you/will you be involved in World-Wide Web development at your organization? *(Check all that apply)*

☐ 1. Specify, recommend, or purchase products and services used in Web development
☐ 2. Develop Web content and applications
☐ 3. Strategic planning of Web projects
☐ 4. Manage the Web staff and activities
☐ 5. None of the Above

9. Which of the following are currently in use or planned for use in your organization? *(Check all that apply)*

CLIENT OPERATING SYSTEMS

☐ 1. DOS
☐ 2. Macintosh
☐ 3. MVS
☐ 4. OS/2
☐ 5. OS/400
☐ 6. UNIX *(any variety)*
☐ 7. VM
☐ 8. VMS
☐ 9. VSE
☐ 10. Windows 3.X
☐ 11. Windows NT
☐ 12. Windows 95
☐ 13. Other *(Please specify)* _____
☐ 99. NONE OF THE ABOVE

SERVER/NET OPERATING SYSTEMS

☐ 1. Apple
☐ 2. Banyan-Vines
☐ 4. IBM-LanServer
☐ 5. IBM-PC Lan
☐ 6. Microsoft-LanManager
☐ 7. Novell-Netware
☐ 8. Windows NT
☐ 9. Other *(Please specify)* _____
☐ 99. NONE OF THE ABOVE

PROTOCOLS

☐ 1. TCP/IP
☐ 2. OSI
☐ 3. SNA*(IBM)*
☐ 4. Appletalk
☐ 5. DECNet
☐ 6. IPX/SPX *(Novell)*
☐ 7. NetBIOS
☐ 8. X.25
☐ 9. NFS *(Sun)*
☐ 10. NetView
☐ 12. SNMP
☐ 13. Other *(Please specify)* _____
☐ 99. NONE OF THE ABOVE

10. Which commercial Internet access providers do you currently use or plan to use in the next 12 months? *(Check all that apply)*

	Currently	Within next 12 months
1. AOL	☐	1. ☐
2. AT&T	☐	2. ☐
3. BBN	☐	3. ☐
4. CompuServe	☐	4. ☐
5. GEIS	☐	5. ☐
6. IBM Global Network	☐	6. ☐
7. MCI	☐	7. ☐
8. Microsoft	☐	8. ☐
9. Netcom	☐	9. ☐
10. Prodigy	☐	10. ☐
11. PSI	☐	11. ☐
12. Sprint	☐	12. ☐
13. U B Networks	☐	13. ☐
14. UUNET	☐	14. ☐
15. Other *(Please specify)*		_____
99. NONE OF THE ABOVE	☐	99. ☐

OVER, PLEASE ▶▶▶

11 Please check below all the products and services that you help acquire, either through approval, planning, recommendation or specification.
(Check all that apply)

COMPUTERS/PERIPHERALS

- ☐ 1. Desktop PCs/Notebooks
- ☐ 2. PC Servers
- ☐ 3. Workstations
- ☐ 4. Unix Servers
- ☐ 5. RISC Server
- ☐ 6. Monitors
- ☐ 7. Printers
- ☐ 8. Storage/Tape Drives
- ☐ 9. CDROM Drives
- ☐ 10. UPS

INTERNETWORKING/LANS

- ☐ 11. Local Area Networks
- ☐ 12. Network Operating Software (NOS)
- ☐ 13. LAN Servers
- ☐ 14. Bridges/Routers/Gateways
- ☐ 15. Intelligent Hubs/Hubs

WIDE AREA NETWORKING/INTERNET ACCESS

- ☐ 16. Modems
- ☐ 17. PCMCIA Modems
- ☐ 18. T-1/T-3 Multiplexers
- ☐ 19. T-1/T-3 Services
- ☐ 20. Fractional T-1 Services
- ☐ 21. Dedicated Lease Lines
- ☐ 22. 56 Kbps Services
- ☐ 23. ISDN Services

SOFTWARE

- ☐ 24. Email/Workgroup
- ☐ 25. Database Servers
- ☐ 26. PC Databases/Front End
- ☐ 27. Communications/Remote Access Software
- ☐ 28. Image/Document Management Software
- ☐ 29. Video Conferencing
- ☐ 30. Multimedia

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- ☐ 31. Web Browsers
- ☐ 32. HTML Authoring Tools
- ☐ 33. VRML Authoring Tools
- ☐ 34. Web Publishing Tools
- ☐ 35. Search Tools/Engines
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- ☐ 37. Firewalls/Security
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- ☐ 40. Outsourcing
- ☐ 41. Other *(Please specify)* _____

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Hermann Hauser (left) and David Jones

In a future that contains the Internet, "the stock broker will be an entity that allows you the most efficient, user-friendly access to knowledge and value-added services. The broker is not the owner of knowledge."
— David Jones

ever, drew their own conclusions. "After universal opprobrium from the press, the Securities & Investments Board, the Chancellor of the Exchequer and the Office of Fair Trading, the London Stock Exchange staged a humiliating climb-down on Wednesday night and agreed to provide live share prices to Electronic Share Information Ltd.," ran one report in *Computergram International,* a daily newsfeed from Apt Data Services Inc.

Jones, who even after the agreement is less pacific than his partners at ESI, casts the incident as a struggle over the control of information and the Internet's tendency to subvert that control—along with the power that goes with it. Traditionally, stock brokers have functioned as possessors of privileged knowledge, Jones explains. But in a future that contains the Internet, "the stock broker will be an entity who allows you the most efficient, user-friendly access to knowledge and value-added services. [The stock broker is] not the owner of knowledge." Such a role is implicit in the ESI service but might threaten those with a stake in the traditional model.

The London Stock Exchange, meanwhile, remains adamant that the entire episode was a lot of sound and fury over nothing more than a simple contract dispute. "We are not prepared to comment on the details of a commercial contract," says Exchange spokesperson Colin Mayes. "We are happy now. It was misinterpreted in the press as if we were taking a Luddite approach, when it was simply that we were not happy with the contract."

Whether the London Stock Exchange feels threatened by the rapid advance of technology is an open question, but certainly it has not ignored it. In a press release put out during the dispute, the Exchange stated that it "support[s] in general terms innovative use of the Internet to display and broadcast public information." In addition, early last year it rolled out an order-driven trading system for small growth stocks called Alternative Investment Market (AIM), and on Oct. 2 it announced the launch of an AIM site on the Web (*http://www.stockex.co.uk/aim*). (The London Stock Exchange would not discuss its Internet strategy with *WebMaster* on the grounds that any such conversation would be premature.)

With the acrimony behind it, ESI has soldiered on with its original plan. By mid-autumn, 8,500 users had registered on the company's Web site, and 250 customers had agreed to pay for access to its online services. (Much of ESI's information is given away free, but the company charges customers for things like portfolio valuation, unlimited real-time pricing and a stock-watch notification service.) The company expected to break even by the end of last year; another round of financing is expected in early 1996, which should make it possible for ESI to begin developing a virtual stock exchange for small, capitalized companies.

Meanwhile, the company is also surmounting the regulatory obstacles: "We have had meetings with the Securities and Investment Board to become a recognized investment exchange," says Hauser. He expects that ESI will be recognized by that group, perhaps as early as the first half of this year. And ESI has already had 17 inquiries from groups in various countries—including Canada and the United States—that are interested in franchising the virtual stock exchange model.

As for lessons learned from the company's experiences last September, Hauser takes the long view. "The important thing is to stand your ground," he says. "There will be substantial productivity gains for the economy [from Internet businesses], so this is the right thing to do."

Jones agrees: "I didn't take any particular satisfaction in what happened generally," he says. "My satisfaction is in seeing progress. Britain was better served by some change." WM

E. B. Baatz can be reached at ebaatz@cio.com.

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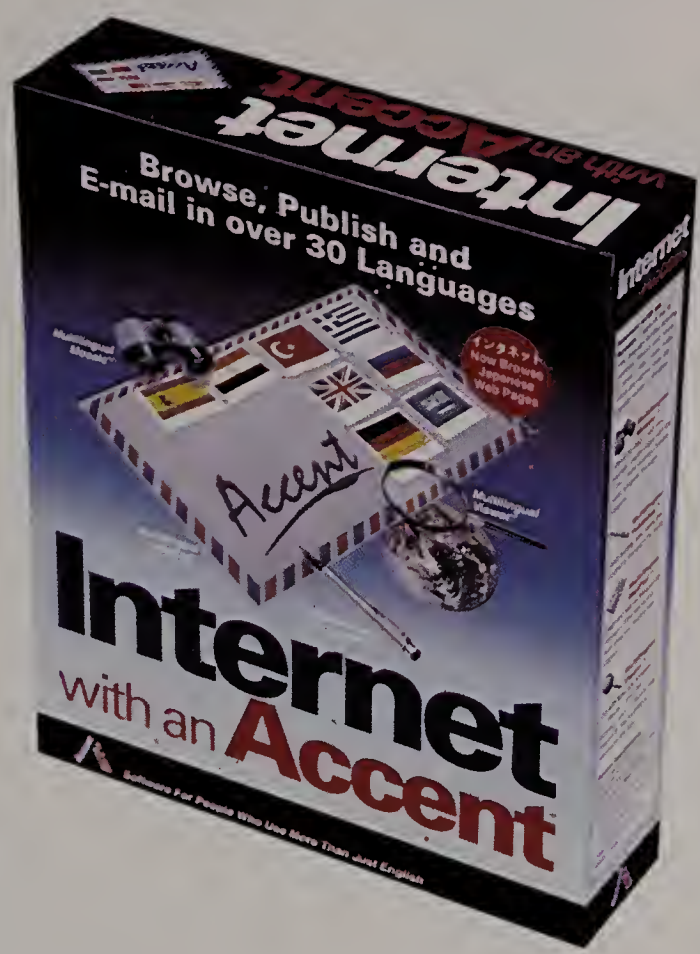

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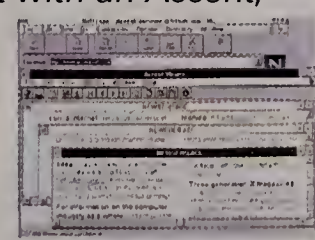

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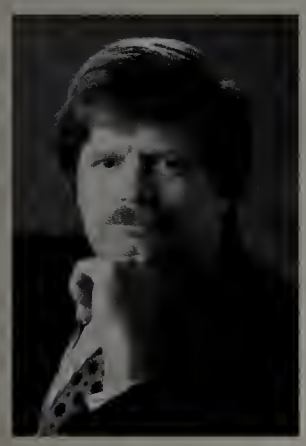

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WHY DO ALL THE LESSONS WE'VE ALREADY LEARNED ABOUT HYPTERTEXT FLY OUT THE WINDOW WHEN IT COMES TO THE WEB? **BY HOWARD STRAUSS**

A Linking Person's Guide

It is not surprising that we'd want more than just text. Text has been around for centuries, and we're bored with it. We have scratched it onto the walls of caves, chipped it into stone tablets, inked it onto paper, beamed it onto computer screens and even written it in the sky.

But text has a flaw, the experts tell us: It is always sequential. Once written, the order of words is forever fixed, and readers are powerless to change that. Not so with hypertext, which has been called "more than text," "nonlinear writing" and "the future of text." Does this mean that before Vannevar Bush[1] wrote about the hypothetical Memex with its hypertext association trail, hypertext simply did not exist?

ILLUSTRATION BY JAMES YANG

Hyperdays Gone By

Of course not. Hypertext has been around for as long as text, and humans have gotten very adept at using it. Most of the trouble that we get into (and we get into quite a bit) stems from our failure to take advantage of the great body of hypertext knowledge that we already possess. The following familiar elements of term papers are also common examples of hypertext.

Footnotes: The footnote that occurs two paragraphs back is a perfect example of hypertext: It diverts readers from their "normal" sequential progression through this column and sets them wandering off to learn an interesting—if peripheral—fact. If you choose not to read a footnote, it is unobtrusive; once you've read it, it is easy to return to sequential reading. There is no true electronic equivalent of a footnote on the World Wide Web, although the colored and underlined links displayed by most Web browsers are used (and often misused) for that purpose.

Tables of contents: Each page number in a table of contents is a hypertext link, and, as with footnotes, returning from those links to the main text is easy. The electronic hypertext equivalent of a table of contents is a menu or list of items. (Page numbers in electronic hypertext are unnecessary.) Like tables of contents, menus are often read sequentially to gain an overview of available information.

Indexes: An index entry is like a table of contents entry, except that it may include many hypertext links instead of one. Today such one-to-many links are almost never found in electronic hypertext, although it would be wonderfully useful if they were.

Hyperchondria: An Abnormal Obsession with Hypertext

In the past we learned how to use footnotes, tables of contents and indexes effectively, but in our electronic formats we seem to have forgotten all of that. We use too many hypertext links, use them where they make no sense, ignore the difference between footnotes and tables of contents, build links to bizarre and unexpected places and ignore standard ways of linking. We confuse, rather than enlighten, with hypertext structures that make bowls of spaghetti seem like models of good organization.

Such embellishment for embellishment's sake is nothing new. Years ago, when laser printers and Macintosh computers first made fancy text processing

[1] *In a 1945 article titled "As We May Think" in* The Atlantic Monthly.

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possible, we were all awed by the new dimension this added to our writing. "Wow," we collectively gasped, "we now have 64 fonts instead of just one!" And many of us felt compelled to use every one of those fonts on every page of every document, making everything we wrote look like a ransom note. Soon, most of us learned that using fonts sparingly was actually more effective. But we have yet to learn this lesson with hypertext.

A quick survey of the Web reveals that most document designers have yet to figure out that making nearly every word and phrase a hypertext link is not helpful. Nor is there universal recognition that a hypertext link should take the reader to someplace useful and expected. Linking Lincoln's Gettysburg Address to Ford's Lincoln automobile is not a good use of hypertext.

In addition, abuses of the older forms of hypertext mentioned above are rife, indicating that confusion exists about what enhances the online reading experience and what simply complicates it. For example, readers should be able to quickly digest footnoted information and then return to finish the interrupted sentence. But in typical Web hypertext, a footnote-like link leads readers off through a long series of links that take them to the furthest reaches of cyberspace with no hope of getting back. Many people who read electronic hypertext long for something that will give them a clue as to where they are and where they've been. But the solution is not to hand a lost person a map: Rather, it is to produce hypertext documents that don't get people lost in the first place.

Tables of contents—which are most common and most useful in technical or reference books—are also frequently misapplied on the Web. Builders of electronic hypertext put just as many links in novel-like information as they do in technical material, cluttering otherwise readable text with gratuitous distractions. In addition, there is a tendency to disguise menus as paragraphs, which neither makes them paragraphs nor improves their readability. Menus that look like menus are fine on the Web.

Hyperactivities: What We Can Do to Make Things Better

Individual hypertext builders must incorporate the previous points into their design strategies, but on a broader scale we need to create new standards and features for hypertext. What follow are a few easy-to-implement improvements (although much more needs to be done).

> We confuse, rather than enlighten, with hypertext structures that make bowls of spaghetti seem like models of good organization.

■ We need real hypertext footnotes and a way to distinguish them from hypertext links. Readers could click on a superscript to open a small window containing the footnote text.

■ We need a way to do hypertext index entries. A pop-up list of links could appear when an index link is selected. For example, the pop-up list for the word "memory" might look like this:

COMPUTER MEMORY: RAM, ROM, CD-ROM
HUMAN MEMORY: how it works and doesn't
MEMORY: dictionary definition
MEMORY: the song from "Cats"

■ We need a way to improve the zoom function, which allows Web users to select an image or area of the screen and zoom in on it, as with a camera. Currently, such images are treated as any other hypertext link; it would be better if the cursor changed to a magnifying glass when it moved over an image that could be zoomed.

■ We need a better way to handle images that contain numerous links, such as a campus map in which you can click on every building for information specific to its function. When the cursor is moved over an area that acts as a link, that area should be highlighted. Clicking on the highlighted link would produce a pop-up list based on the conventions for text links described above.

Just Hype?

Hypertext has been around for years and we have done wonderful things with it on the printed page. In its electronic incarnation it is better and more powerful, but also more confusing. Unfortunately, in making the leap from printed hypertext to electronic hypertext we have failed to exploit either our existing knowledge or the new technologies that are proliferating at a tremendous rate.

Is hypertext just hype? No, it is an important, effective way of structuring information that we will likely use more every day. But just how important and effective it ultimately becomes will depend largely on how well we learn the lessons of the past and evolve sensible standards for the future. As with many other tools, we can use hypertext to create a monstrosity or a Mona Lisa. WM

Howard Strauss is manager of advanced applications at Princeton University. He can be reached at howard@pucc.princeton.edu. *A longer version of this article was published in the May 1995 issue of* EDUCTECH Report.

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Tunnel Vision

To all those remote workers dying to connect to their corporate networks via the Internet but thwarted by some pesky old firewall, Digital Equipment Corp. suggests using a shovel.

Well, OK, not a shovel exactly. But DEC's new Internet Tunnel product allows trusted users to traverse secure boundaries, transforming a portion of the fearsomely public Net into a reassuring "virtual private network." Tunneling—a method of transporting data by encapsulating it in wrapper packets—is nothing new; the difference here is that instead of a protocol like Novell's IPX being encapsulated, regular IP packets are encrypted and then encapsulated inside TCP/IP packets. Thus rendered unreadable, the data zips across the Internet until it reaches its destination, where it is decrypted into usable form. Authentication is performed in two phases: during tunnel-session creation or when a remote tunnel client makes initial contact with a tunnel server, and then again during data-packet transmission.

Digital is offering Personal Tunnels for individual PC users and Group Tunnels for organization-to-organization communication. For information, call Digital at 800 344-4825. They're on the Web at *http:// www.digital.com.*

Inside Edition

One look at Silicon Graphics Inc.'s awesome site (*http://www.sgi.com*) and you know these guys are smart about the external Web. But SGI also wants to play in the growing market for internal applications; ergo, its MindShare OutBox tool is aimed at companies trying to leverage the Web for workgroup collaboration behind the firewall.

MindShare OutBox is a drag-and-drop publishing tool that allows organizations already using Silicon Graphics' Indy or Indigo workstations to automatically generate Web pages hyperlinked to any data type easily accessed by PCs, Macs or Unix machines. Information can be updated in real time, and corporate users can then retrieve it using industry-standard Web browsers. The product integrates the company's WebMagic HTML editor with a suite of workgroup and communications software to enable multi-site—even global—project collaboration.

The Indy authoring workstation and server, by the by, include a digital video camera, CD-quality sound system and ISDN, while Indigo boasts 3-D capability. Silicon Graphics' phone number is 415 390-3156, but that Web site is well worth the trip

I Came. I Saw. I Linked.

You may think the fact that mass communications guru Marshall McLuhan was Canadian is no basis for choosing a Web authoring tool, but Robert Arn begs to differ. A powerful understanding of communications "goes to the core of Canadian culture," the president of Toronto-based InContext Systems Inc. recently told *Canadian Business* magazine. That may explain why InContext's Spider Web editor (version 1.1) has been getting some pretty good press from a number of sources, many of them in a neighboring NAFTA country.

InContext is an old SGML hand—SGML being the more complicated, heavy-duty version of the now-ubiquitous HTML. Spider promises to make HTML easier still by shoving all that nasty coding stuff behind the scenes. The product speaks directly to the browser, so that users doing the surf thing can instantly insert links to cool pages or download them into Spider to be used as foundations for new pages. Users can import from any Windows word processor; headings, lists and paragraphs are recognized and converted automatically. (For those with an aversion to borrowing, the product also comes with an extensive library of templates and clip art.)

While Spider is being marketed to the masses, it is equally applicable in corporate settings, where newly hatched departmental enthusiasts are itching to put up something quick and easy. For information, call 301 571-9464 or check out the company's Web site at *http://www.incontext.ca.*

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The Back End of the Affair

Now that you've glommed on to the fact that the Web makes a nifty graphical front end, the only question left is the niggling one of how you connect it to the back end. But when that back end is a relational database, integrating the Web means rounding up some crack programmers and getting them to write complex C, C++ or Perl code. So much for ease of use.

Spider 1.1 from Spider Technologies Inc. (no relation to InContext Spider, mentioned next page) makes fast work of building and maintaining integrated Web/database applications. The product consists of two modules: Spider Development, which creates applications, and Spider Deployment, which executes them. In the development environment, users can view database structures, select tables and columns, and directly manipulate HTML forms and fields using those emblems of ease, point-and-click and drag-and-drop. The visual interface facilitates frequent updates, which (in case you hadn't heard) is one of the salient features of this Web stuff.

Spider currently supports Informix, Sybase and Oracle databases running on major Unix platforms. The company is reachable at 415 969-6665 or on the Web at *http://www.w3spider.com.*

Light at the End of the Labyrinth

Mazes have loomed large in the popular imagination from Homer to Kafka, but no literary light ever envisioned anything as immense, complex, or thoroughly frustrating as the Internet. As Web travelers stumble from site to site looking for critical information, new tools are emerging to facilitate those searches. One such product is Open Text Corp.'s Web Search Server, which indexes Web pages and other information databases across multiple platforms.

Open Text's technology—recently incorporated into mega-directory Yahoo!—uses intelligent agents and "crawlers" to index every word and page of the entire Web, articles and prepositions included (so if you're looking for occurrences of "To be or not to be," this product may be for you). Users can perform Boolean or weighted searches, or they can seek out strings in parts of documents, words that occur in proximity to other words, or documents that are similar in content.

Open Text's search engine works with more than 40 different document formats and supports languages as wide-ranging as Italian and Chinese. It can also be applied to internal corporate databases housing massive amounts of information that can't be easily categorized. For information, call 519 888-7111 or turn your browser toward *http://www.opentext.com.*

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Easy Listening

Recognizing the limitations of the written word—at least when compared to sound—VocalTec Inc. wants to transform the Internet into a truly multimedia vehicle where talk isn't just cheap, it's free.

Available for downloading gratis from *http://www.vocaltec.com*, the company's new InternetWave (IWave) voice communications tool gives radio stations, entertainment organizations, universities and even regular joes a way to broadcast sound. The software has two main components: a server package that includes an encoder and works in conjunction with standard Web servers, and a Windows-compatible helper application. The encoder compresses data from Windows.wav and Unix.au files using algorithms similar to those in VocalTec's Internet Phone product. The compressed data is then stored on the Web server, from which it can be downloaded onto end users' PCs. (For playback, end users must have Windows 3.1 or higher and a SLIP or PPP connection. Also, a 28.8 or faster connection is desirable; anything less and you'll think you're listening to—horrors!—AM radio.)

Surfers who call into sites equipped with IWave can choose the sections of saved audio clips they'd like to hear. Site hosts can also set passwords to limit access to recordings. For more information, call 201 768-9400.

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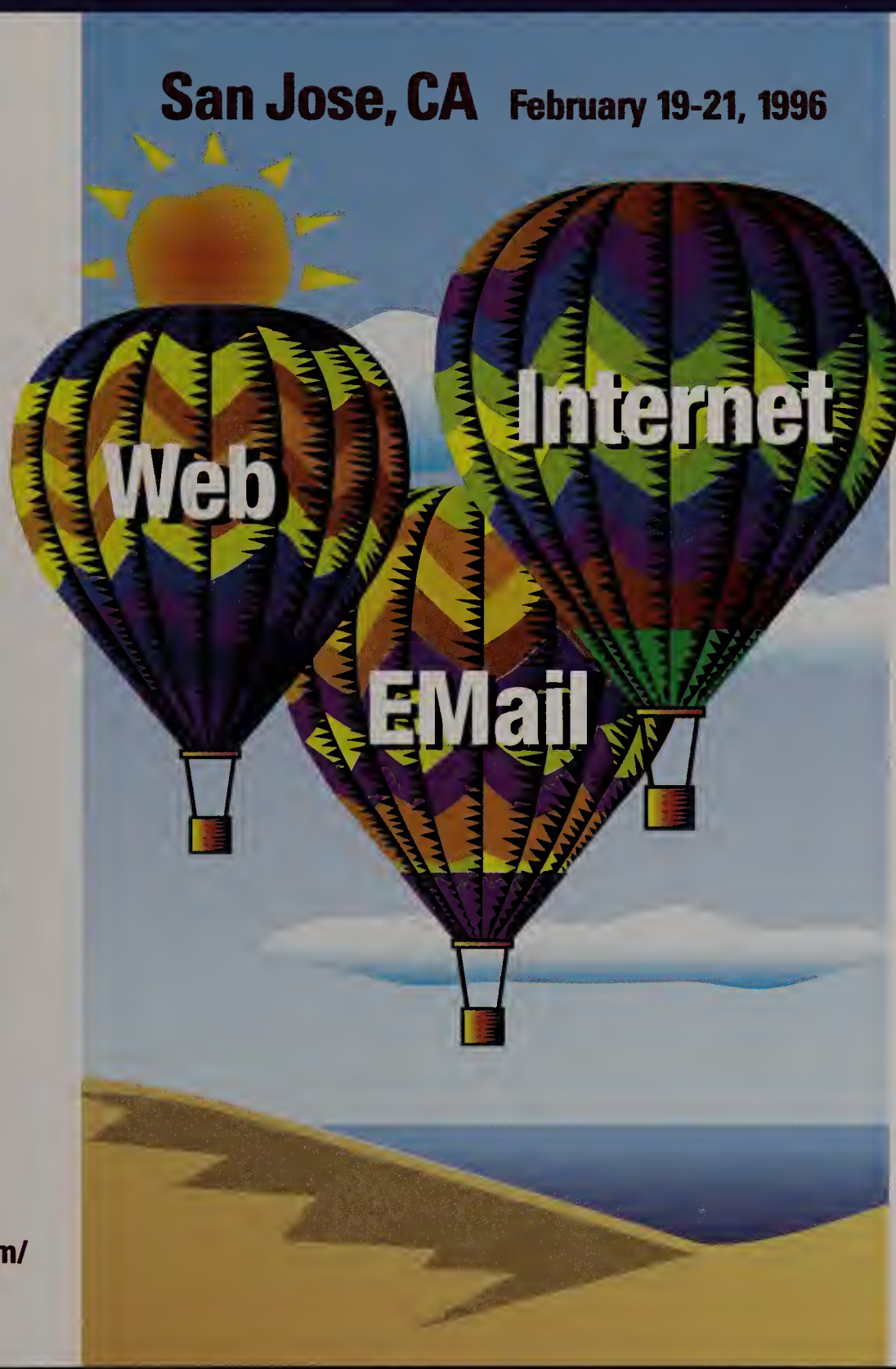

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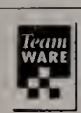

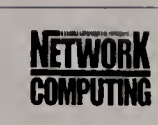

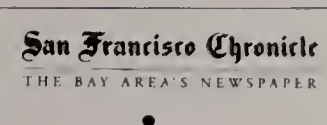

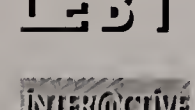

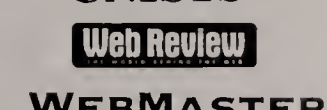

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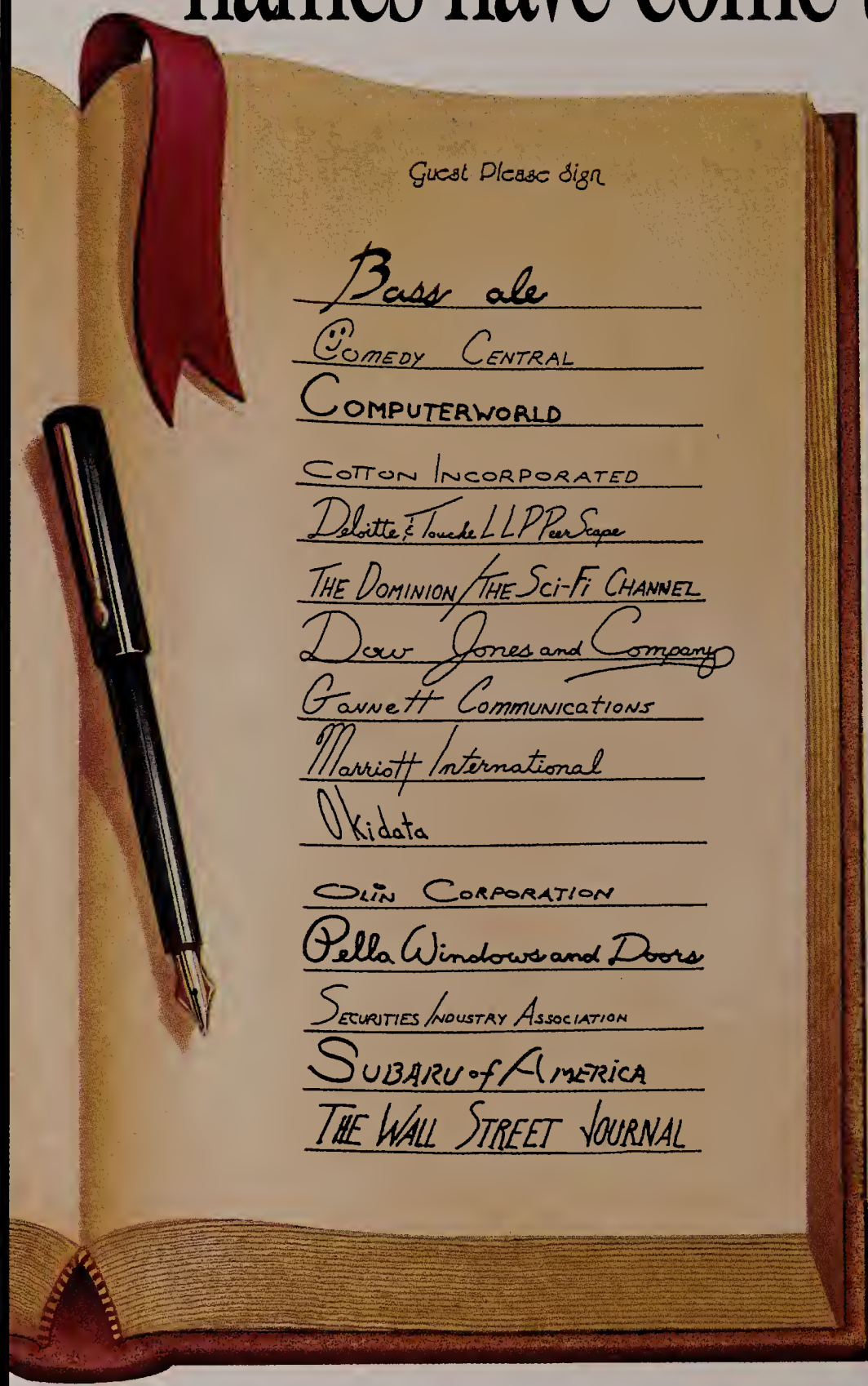
We must be a good host. A lot of big names have come to the party.



UUNET Web hosting services have drawn quite a crowd.

It's a common misconception: If you're serious about the Web, you should be hosting your own site.

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